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CURTIS'S
BOTANICAL MAGAZINE,

COMPRISING THE

Plants of the Royal Gardens of Kew,

AND

OF OTHER BOTANICAL ESTABLISHMENTS IN GREAT BRITAIN;
WITH SUITABLE DESCRIPTIONS;

BY

SIR JOSEPH DALTON HOOKER, M.D., C.B., K.C.S.I.,
F.R.S., F.L.S., ETC.,
D.C.L. OXON., LL.D. CANTAB., CORRESPONDENT OF THE INSTITUTE OF FRANCE.

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Tab. 7212.

MORÆA Robinsoniana.

Native of Lord Howe's Island.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Moræa, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 688.)

Moræa *Robinsoniana ;* elata, densissime cœspitosa, foliis radicalibus ensiformibus longe acuminatis, pedunculo valido basi folioso paniculatim ramoso, bracteis inferioribus elongatis foliaceis acuminatis, superioribus oblongis subacutis, supremis ovarium vaginantibus, floribus amplis breviter pedicellatis albis, perianthii segmentis patentibus breviter unguiculatis e basi liberis, 3 exterioribus late ovatis obtusis basi primulinis et macula auranticaca 2-loba notatis, 3 interioribus paullo minoribus oblongis obtusis concoloribus, filamentis liberis anthera lineari brevioribus, connectivo in apiculum obtusum producto, styli ramis, late oblongis 2-lobis denticulatis, lobis rotundatis, crista brevi erosa, capsula clavata obscure hexagona.

M. Robinsoniana, *Moore & Muell. in F. Muell. Fragment.* vol. vii. p. 153 *Benth. Fl. Austral.* vol. vi. p. 409.

Iris Robinsoniana, *F. Muell. l.c.*; *G. Benn. in Gard. Chron.* 1872, 393, fig. 123, 124; *Baker in Journ. Linn. Soc.* xvi. (1878) 147; *W. Watson in Gard. Chron.* 1891, i. 457, 459, fig. 94, 95.

Perhaps the most curious point in the history of this magnificent plant is the difficulty hitherto experienced in flowering it in Europe. The first person who called attention to its existence was the late Dr. Foulis, of Sydney, a gentleman who had resided in Lord Howe's Island, and who informed Mr. Moore, of the Sydney Botanical Gardens, and Dr. G. Bennett, of that city, that he had discovered it, and had introduced it some years previously into his garden (at Sydney) where it had died without flowering; he further added that it was known to settlers in Lord Howe's Island as "the Wedding flower." Dr. Bennett's account of it was communicated to the Gardener's Chronicle (1872, p. 393), together with a sketch of the whole plant, and of a flower, by Mr. E. Bennett. The first botanical account of it is that contained in Mr. Moore's "Report on the Vegetation of Lord Howe's Island," dated September, 1869, where it is described as an Iridaceous plant resembling a large species of *Moræa* (but which would probably prove to be a new genus) with leaves six feet long by two or three

inches in breadth; a candelabra-like flowering stem six feet high, and flowers four inches in diameter; and where it is further stated that it would be published by Baron Mueller and dedicated to Sir Hercules Robinson, K.C.M.G., Governor of New South Wales. Mr. Moore introduced the plant into the Sydney Botanical Gardens, where it flowered in December, 1871. The next accounts of its flowering are respectively in the Botanical Garden of Hakgala, in Ceylon, in 1885, under the management of Mr. Nock; in Mr. Dorrien Smith's garden in the Scilly Islands, in 1888, and in the Royal Gardens, Kew, in June, 1891.

Morœa Robinsoniana has, as will be seen by the citations under the description, been referred both to *Morœa* and to *Iris*, genera which differ but slightly in botanical characters, but most markedly in geographical distribution. Fortunately our plant is a *Morœa*, on both counts, for the perianth segments are sessile on the top of the ovary, and not united into a tube, as in *Iris*, and whereas there are no species of *Iris* in the Southern hemisphere, *Morœa* is almost confined to Africa and South of the Tropics, a few species only reaching Abyssinia. *M. Robinsoniana* is the only extra African species, and is one of the many proofs of affinity between the Australian and the Cape Floras.

The native country of *M. Robinsoniana* is an islet only six and a half miles long by three quarters of a mile in average width, lying between Australia and New Zealand, in Lat. 31° S., Long. 158° E., about four hundred miles east of Port Macquarie. In its vegetation the islet partakes of those of Australia, New Zealand, and the Pacific Islands, with a most remarkable predominance of endemic forms, especially of Palms, three species of which are peculiar to it.

The plant figured was received at Kew from Mr. Chas. Moore, F.L.S., of the Sydney Botanical Gardens, in about 1873, and flowered for the first time on June 20th, 1891, continuing to bloom till the beginning of the following October, and having had in the interval four hundred and fifty-seven flowers, all borne by three branches of the panicle, and which remained open only one day, giving out a delicious odour.—*J. D. H.*

Fig. 1 and 2, stamens; 3, arm of style :— *enlarged.*



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Tab. 7213.

CHIRITA DEPRESSA.

Native of China.

Nat. Ord. Gesneraceæ. Tribe Cyrtandreæ.

Genus Chirita, *Ham.* (*Benth. & Hook. f. Gen. Pl.* vol. ii. p. 1022.)

Chirita *depressa;* humilis, surculifera, foliis rosulatis breviter late petiolatis, late ovatis obtusis obtuse serratis penninerviis utrinque sericeo puberulis subtus niveis nervis crassis, cymis paucifloris breviter pedunculatis, floribus 1½ pollicaribus calycis pubescentis et glanduloso-pilosi laciniis 5 inæquilongis linearibus erectis tubo corollæ multo brevioribus, corollæ violaceæ tubo subinflato lobis rotundatis triplo longiore, staminibus medio tubo insertis, filamentis incurvis glaberrimis, antheris parvis cohærentibus nudis oblongis parallelis, staminodiis 2 filiformibus incurvis glandulosis capitellatis, tertio minimo erecto demissius inserto, disco annulari sinuato glaberrimo, ovario styloque valido apice incurvo pubescentibus et sparse glandulosis.

The habit of this *Chirita* is quite unlike that of any other of the genus known to me. A very short stout rhizome bears a tuft of rosulate leaves, and sends out all round from below the insertion of the leaves stout green surculi, as thick as a swan's quill, that root at the apex and form plants similar to the parent. The whole forming a dense mass of foliage that quickly fills a pan. The plant is very succulent, of a pale green colour, except the under sides of the leaves, which are clothed with an almost snow-white pubescence. The flowers, which are abundantly produced, are disposed in bibracteate cymes terminating very short, stout peduncles, so short that the flowers appear nestled amongst the leaves. Its nearest congener is *C. eburnea*, Hance (Journ. Bot. vol. v. 1883, p. 168), a native of the same province in China, which has similarly thick almost fleshy leaves, with broad petioles and covered with the same very fine pubescence, but the leaves are quite entire, and instead of being many- and penni-nerved the nerves are very few and irregularly disposed and branched. The flowers of *C. eburnea* are similar to those of *C. depressa* in form, but its cymes are on long ascending peduncles, the

corolla is ivory-white streaked with red, the bracts are very large and broad, the anthers are densely bearded at the back, and amongst the numerous specimens in the Herbarium at Kew none show any signs of having been increased by suckers from the rootstock. *E. eburnea* is a very handsome species, and it is to be hoped that Mr. Ford, who has sent dried specimens, will procure living plants of it. It must be observed that the drawing here given of *C. depressa* was taken from a very young specimen, the first that flowered, and it conveys no idea of the dimension which the plant attains; nor does it show the mode of increase by suckers, for this is in all states (as grown at Kew) concealed by the dense foliage.

C. depressa is a native of a district on the North river of the Canton (Kwantung) Province of China, where it was procured by Mr. C. Ford, Superintendent of the Hong Kong Botanical Gardens, who sent living plants of it to Kew in 1889, which flowered in June, 1891.—*J. D. H.*

Fig. 1, Portion of leaf showing the pubescence of the surface; 2, calyx and style; 3, tube of corolla laid open; 4, top of pedicel, disk and ovary; 5, transverse section of ovary:—*all enlarged.*

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Tab. 7214.

CIRRHOPETALUM Thouarsii.

Native of Mauritius and the Pacific Islands.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Cirrhopetalum, *Lindl.*; (*Benth. & Hook. f. Gen. Pl.* vol. iii. p. 505.)

Cirrhopetalum (Umbellatæ) *Thouarsii*; pseudobulbis ovoideis alte costatis demum nudis, foliis lineari-oblongis obtusis in petiolum brevem angustatis supra medio profunde sulcatis costa subtus valida, marginibus recurvis, scapo elongato gracili decurvo vaginis 2–3 brevibus appressis, umbella pluriflora unilaterali, bracteis subulatis pedicellis dimidio brevioribus, floribus pallide flavis, sepalo dorsali hemispherico glanduloso-punctato in caudam longiorem filiformem apice subincrassatam repente constricto, lateralibus dorsali pluries longioribus cohærentibus impunctatis lineari-lanceolatis acuminatis enerviis supra convexis, petalis sepalo dorsali æquilongis ovatis aristatis glanduloso-punctatis pilis elongatis ciliatis, labello aureo breviter stipitato recurvo linguæformi obtuso basi dilatato puberulo marginibus recurvis crenulatis, columnæ brachiis elongatis subulatis erectis, anthera antice erosa.

C. Thouarsii, *Lindl. in Bot. Reg.* sub t. 832; *Gen. & Sp. Orchid.* 58, partim. (non *Bot. Reg.* 1838, t. 11, nec *Bot. Mag.* t. 4237); *Rolfe in Gard. Chron.* 1891, vol. ii. p. 69.

C. umbellatum, *Hook. et Arn. Bot. Beech. Voy.* p. 71 (*excl. cit. Reinw.*).

Bulbophyllum longiflorum, *Thouars Orchid. Afr.* t. 98; (non *S. Moore in Baker Fl. Maurit.* 346); *Guillem. in Ann. Sc. Nat. Ser.* 2, vii. (1839), p. 179; *Seem. Fl. Viti*, p. 301.

Epidendrum umbellatum, *Forst. Prodr.* 323.

Cymbidium umbellatum, *Spreng. Syst. Veg.* vol. iii. p. 723.

A very interesting plant, as being that upon which the genius *Cirrhopetalum* was founded by Lindley in the Botanical Register in 1824. Subsequently, in the "Genera and Species of Orchideæ" Lindley identified it with the Mauritian plant of Thouars, three others from very distant countries, namely the *Zyloglossum umbellatum*, Reinw., of Java, the *Epidendrum umbellatum*, Forst., of the Society Islands, and a Philippine Island plant, afterwards figured in the Botanical Register (vol. xxiv. t. 11) and in this work (t. 4237) as *C. Thouarsii*. Referring to the vast distances between these localities, Lindley observes that in respect of its distribution *C. Thouarsii* has no parallel amongst Orchideous plants. Such would no doubt be the

case if proved, but considering the difficulty of identifying orchids from herbarium specimens, and the very scanty materials at the great orchidologists' disposal fifty years and more ago, it appeared to me that so remarkable a statement required confirmation, and I have therefore carefully investigated the subject with the aid of the more numerous and better specimens now accessible at Kew, with the result, that if not wholly reliable, Lindley's conclusion was so in the main.

Of the Mauritian *C. Thouarsii*, Lindley had to depend solely on the plate in Thouars' work, and for the supposed Javan plant he no doubt relied on a meagre description, for a copy by Lindley of a drawing by Reinwardt himself of his *Zyloglossum umbellatum*, which I find in Lindley's Herbarium (and which was no doubt obtained after he had referred the species to *C. Thouarsii*), shows that it is a very different species, with a broadly elliptic leaf, obtuse lateral sepals, and no awn to the dorsal sepal, while the petals are quite glabrous; further it is a native of the Celebes, not of Java. With regard to the Philippine plant, which was afterwards published as *C. Thouarsii* in both this Magazine and in the Botanical Register, it differs from the Mauritian in the numerous flowers, the dorsal sepal is smaller and narrower, the petals are sharply serrate, not fringed with long hairs, and the arms of the column are much shorter. The Society Island plant remains. I have examined specimens of it from the Tahiti, the Fiji, and Society Islands and fail to find any difference between them and the Mauritian. Thus confirming Dr. Lindley's statement in the main, though not in detail. I have only to add that the colour of the flower varies in both the Mauritius and Pacific Islands specimens from yellow to a reddish brown.

C. Thouarsii was sent to the Royal Gardens by Mr. E. E. Bewsher, of the New Oriental Bank Corporation, Mauritius, a gentleman who has taken up the study of the Botany of the Island, and will no doubt by diligent exploration add much of interest to its flora; it flowered in the Royal Gardens in July, 1891.—*J. D. H.*

Fig. 1, Flower, with all but the bases of the lateral sepals removed; 2, lip; 3, column; 4, anther; 5, pollinia:—*all enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 7215.

IRIS Fosteriana.

Native of Afghanistan.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Iris, *Linn.*; (*Benth. & Hook. f. Gen. Pl.* vol. iii. p. 686.)

Iris (Xiphion) *Fosteriana;* bulbo oblongo-cylindrico tunicis membranaceis brunneis, fibris radicalibus crassis, foliis 4–6 confertis rigidulis falcatis lanceolatis acuminatis pallide viridibus marginibus incrassatis, pedunculo brevi sæpissime monocephalo, spathæ valvis ventricosis subscariosis pallide viridibus, perianthii tubo producto segmentis exterioribus luteis obovatis in limbo ungui lato breviori, segmentis interioribus pendulis lilacinis obovato-unguiculatis, styli cristis magnis oblique ovatis.

I. Fosteriana, *Aitch. et Baker in Trans. Linn. Soc. Ser.* 2 *Bot.* vol. iii. p. 114.

This new species of bulbous Iris belongs to the same group as *I. orchioides* (Bot. Mag., tab. 7111), and *I. sindjarensis* (Bot. Mag., tab. 7145). From a horticultural point of view it differs from all its allies in the diversity in colour of the different parts of the flower. It was discovered in 1884 by Surgeon-Major Aitchison, F.R.S., whilst acting as naturalist to the Afghanistan Delimitation Commission, growing plentifully at Badghis in dry soil on the low hills at an elevation of three thousand feet above sea-level. These spring-flowering bulbous Irises of Central Asia are very difficult to cultivate in our comparatively damp sunless climate, but here, as in so many other cases, Professor Foster, after whom the species was named, has surmounted the difficulty, and our drawing was made from specimens which he sent from Cambridge this present spring.

Descr. *Bulb* oblong-cylindrical, about an inch in diameter, with brown membranous outer tunics produced above its neck and many fleshy root fibres. *Leaves* four to six, contemporary with the flowers, crowded, falcate, lanceolate-acuminate, firm in texture, pale green, channelled down the face, strongly ribbed and furnished with a pale thickened horny boarder. *Peduncle* very short, bearing usually one, rarely two clusters of flowers. *Spathes* ventricose, about

two inches long; valves subscariose and pale green at the flowering time. *Perianth-tube* reaching to the top of the spathe or slightly exserted; outer segments bright yellow, with a spreading obovate blade streaked with black, shorter than the ascending claw; inner segments shorter, pendulous, bright lilac, obovate-unguiculate. *Styles* above an inch long; crests large, oblique, ovate. *Anther* about as long as the filament.—*J. G. Baker.*

Fig. 1, Back view of anther; 2, front view of anther; 3, apex of petaloid style, with stigma:—*all enlarged.*

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Tab. 7216.

PRIMULA Poissoni.

Native of China.

Nat. Ord. Primulaceæ. Tribe Primuleæ.

Genus Primula, *Linn.*; (*Benth. et Hook. f. Gen. Plant.*, vol. ii. p. 631.)

Primula *Poissoni;* elata, robusta, glaberrima, efarinosa, foliis rigide coriaceis glaucescentibus obovato-oblongis apice rotundatis argute dentatis, costa valida in petiolum latissimum vaginantem dilatata, nervis ascendentibus gracillimis. scapo valido foliis multoties longiore tereti, floribus perplurimis amplis in verticillos superpositos congestis, bracteis lanceolatis erectis herbaceis pedicellos æquantibus, calyce ¼ poll. longo tereti supra medium 5 fido basi rotundato lobis erectis ovato-lanceolatis subacutis, corollæ tubo infundibulari calyce paullo longiore intus puberulo, limbo explanato roseo, lobis obcordatis crenulatis, ore annulo crenato aureo instructo, antheris parvis basin versus tubo corollæ sessilibus, ovario globoso, stylo breve stigmato capitato, capsula obovoidea late **umbonata calyce fere æquilonga.**

P. Poissoni, *Franchet in Bull. Soc. Bot. Fr.* vol. xxxiii. (1886) p. 67; *Pax Monogr. Prim. in Engl. Jahrb.*: *Forbes & Hemsl. in Journ. Linn. Soc.* **vol. xxvi. (1889) p. 41.**

On Tab. 5916 is figured *Primula japonica*, which may be considered as the type of the Asiatic species with superposed whorls of flowers; and at Tab. 6732 another species with similar inflorescence, *P. prolifera*, Wall., under which I classed the Javanese *P. imperialis*, Jungh. (*Cankrienia chrysantha*, De Vriese), an error which I hasten to acknowledge, and shall shortly atone for by the publication of the true *P. imperialis*, which has flowered at Kew, and of which a drawing has been made for this work. Recent discoveries in the interior of China have added several other species with the same inflorescence, including the subject of the present plate, which differs from both those first mentioned in the much more coriaceous pale subglaucous leaves, the funnel-shaped tube of the corolla, and especially in the capsule, which is not globose but shortly obovoid.

Seedlings of *P. Poissoni* were received at the Royal Gardens, Kew, from the Jardin des Plantes, Paris, in 1890, plants from which flowered in a greenhouse in April, and

January 1st, 1892.

continued to bloom all summer. Mr. Watson informs me that the plant here figured produced eight scapes of flowers, and in fact flowered itself to death, as did several other specimens; and that many of the corollas were six-lobed. This tendency to overflowering under cultivation must be constitutional, for Messrs. Lemoine and Sons, of Nancy, had a plant which bore twelve coeval scapes. The native specimens are quite small, with leaves two to three inches long, and a solitary slender scape with few flowers in a whorl; whereas in the Kew plant the scape is two feet high, almost as thick as a goose quill, of a dark green, and sometimes spotted with black.—*J. D. H.*

Fig. 1, Calyx and pistil; 2, portion of corolla laid open showing the oral annulus and stamens; 3 and 4, front and back view of anthers; 5, ovary, style and stigma:—*all enlarged.*

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Tab. 7217.

PRIMULA IMPERIALIS.

Native of Java.

Nat. Ord. Primulaceæ. Tribe Primuleæ.

Genus Primula, *Linn.*; (*Benth. et Hook. f. Gen. Plant.*, vol. ii. p. 631.)

Primula *imperialis*; elata, robusta, sub-efarinosa, foliis elongato-obovatis spathulatisve auguste denticulatis apice rotundatis subcoriaceis, inter nervos depressos creberrime bullato-reticulatis, subtus pallidioribus dense lacunosis glandulis minimis globosis obsitis, costa ampla crassa, scapo valido, verticillis dense multi-floris, bracteis numerosis erectis lineari-subulatis basi confluentibus quam pedicellos suberectos brevioribus, calyce cupulari ad medium 5-fido basi rotundato, lobis triangularibus erectis obtusis. corollæ ochraceæ tubo calyce duplo longiore, fauce subinflato crenulatim annulato, lobis fere rotundatis 2-fidis, ovario globoso, stylo gracili, antheris parvis, capsula globosa calyci æquilonga late umbonata, seminibus minutis obtuse angulatis papillosis.

P. imperialis, *Jungh. in Tijdschrift. Nat. Gesch.* vol. vii. p. 298; *Miquel Fl. Ind. Bat.* vol. ii. p. 1001; *Watson in "The Garden,"* xl. 266, *cum Ic.* Caukrienia chrysantha, *De Vriese in Jaarb. der Maatch. van Tuinbow.* 1850, p. 30 (*cum Ic. in Flore des Serres iterata*); *Plant. Jungh.* vol. i. p. 80.

As I have elsewhere stated (under *P. Poissoni*, Plate 7216), I erred when figuring and describing the Himalayan *P. prolifera* (Plate 6732), in referring the Javan *P. imperialis* to that species. Comparing the figures now accessible of the two plants, as hitherto grown in this country, their union would seem to be hardly excusable, but a reference to the wild Javanese specimens of of *P. imperialis*, preserved in the Herbarium, and a comparison of these with those of *P. prolifera*, will modify that opinion, so different are some of the native specimens of the former from the gigantic robust plant that has flowered at Kew, and so large are some of those of *P. prolifera* which even rival its congener. Nor must it be overlooked, as bearing on the subject, that recent investigations have proved that many Javanese and other Malayan mountain plants, once supposed to be endemic, are absolutely identical with Himalayan. On this matter I have only further to say, that a most careful re-examination of the wild forms of the two species elicits as the only apparent distinctions the more robust habit, the thicker texture, broader mid-rib, close reticulate nervation, and bullate surface of the foliage of the Javanese plant and its deeper coloured flowers.

February 1st, 1892.

In size, form, and denticulation, and glandular undersurfaces the leaves are identical, though the toothing is usually smaller and more regular in *imperialis* (in both the leaves are sometimes quite entire), and both have a slender scape and far fewer flowers with more slender pedicels than in the cultivated *P. imperialis*. Both species have fruited at Kew, and I have closely examined their seeds, hoping therein to find distinctive characters; but in vain, their differences are hardly appreciable. In both the seeds are papillose and obtusely angled, those of *P prolifera* are slightly the larger, and their papillæ somewhat shorter. I may here observe that *P. Poissoni* (Tab. 7216), the wild and cultivated forms of which are as widely different as are the analogous conditions of *P. imperialis*, has ripened its seeds at Kew, and these are very small, subcubical, acutely angular, most minutely pitted, but not papillose.

To clear up the history of these "Imperial" Primroses, it will be necessary to cultivate plants of *P. prolifera* from Wallich's original habitat of the Khasia Hills in Eastern Bengal, altitude four thousand to six thousand feet, where I collected it myself in 1849, and sent seeds to Kew, which (as in the case of so many trials of *P. imperialis*) did not germinate. The Khasian may prove distinct from the Himalayan plant, which grows only at elevations twelve thousand to sixteen thousand feet, and may prove to be the same as the Javan, or a third species.

P. imperialis is a native of the summits of the loftiest Javan mountains at eight thousand to nine thousand feet elevation, where it was discovered by the Dutch botanist of the Buitenzorg Gardens, upwards of half a century ago, and was more recently figured by De Vriese, with the name of *Cankrienia chrysantha*, under an erroneous view of the structure of the fruit. The Kew plants were raised from seeds sent by Dr. Traub from the Buitenzorg Gardens in 1889. Mr. Watson informs me that the seeds were soaked in hot water and sown in tropical heat, and the seedlings removed into a greenhouse as they germinated. Also that a plant was placed in the open border in midsummer last, which is alive up to this date (January 15, 1892) and which, though damaged as to the foliage, looks as if it might survive the winter.—*J. D. H.*

Fig. 1, Calyx and style; 2. corolla laid open; 3 and 4, stamens; 5, ovary:—*all enlarged.*



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Tab. 7218.

HYDNOPHYTUM Forbesii.

Native of New Guinea.

Nat. Ord. Rubiaceæ.—Tribe Psychotrieæ.

Genus Hydnophytum, *Jack.* ; (*Benth. & Hook. f. Gen. Pl.* vol. ii. p. 132.)

Hydnophytum *Forbesii* ; rhizomate tuberoso lobato echinato, caulibus brevibus teretibus, foliis subsessilibus obovatis obtusis v. subacutis, floribus axillaribus brevissime pedicellatis, calycis tubo brevissimo ore truncato, corollæ tubo elongato gracili cylindraceo lobis ovatis pluries longiore extus lobisque glaberrimis, fauce exannulato tubique parte superiore villosis, filamentis antheris brevioribus, stylo gracili, stigmatibus 2 inclusis, drupa ellipsoidea umbonata, pyrenis 2 obovoideo-oblongis compressis apice 2-lobis inter lobos longe rostratis.

I must refer to Plate 6883 (*Myrmecodia Beccarii*) for some general observations on the wonderful group of epithytic plants to which Signor Beccari has given the very appropriate name of "Piante ospitratice," from their tuberous rootstocks affording nests for certain species of ants. Of these there are two principal Asiatic genera, natives of the Malayan and Pacific Coasts and Islands, both belonging to the order *Rubiacea*, and closely allied to one another. These are *Myrmecodia*, with eighteen species, and *Hydnophytum* with thirty, most of the species of both of which were discovered by Signor Beccari himself, and are admirably described in detail and figured by him in his capital work "Malesia," a work now abandoned through lack of the requisite funds to carry it on ; and with respect of which abandonment it may truly be said that the glory of Italian Botany has for the present departed.

I can nowhere find amongst the species hitherto described, any with which *H. Forbesii* can be confounded ; it is the only one hitherto described with an echinate rhizome, that character being hitherto supposed to be confined to *Myrmecodia*. In its long slender corolla tube it resembles the Pacific Island species alone, of which there are six or seven, all differing in other characters from *H. Forbesii*. Its foliage so closely resembles that of the

H. formicarium (the only British Indian species as yet known) that in a dried state they are undistinguishable; but the rhizome of *H. formicarium* is unarmed, the corolla tube is very short and glabrous within, the fruit is crowned with a cup-shaped calyx-limb, and the pyrenes have no horn.

H. Forbesii was discovered in New Guinea by Mr. Forbes, author of a "Naturalist's Wanderings in the Eastern Archipelago," who, in 1886, sent the plant here figured to the Royal Gardens, Kew, where it flowered in July, 1889, and fruited in the following October, and again in 1891.—*J. D. H.*

Fig. 1, Portion of branch and flowers; 2, flowers; 3, portion of corolla laid open; 4, fruit; 5 and 6, side and front view of pyrene; 7, seed; 8, embryo:—*all but fig.* 1 *enlarged.*





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Tab. 7219.

BEGONIA glaucophylla.

Native country unknown.

Nat. Ord. Begoniaceæ.

Genus Begonia, *Linn.* (*Benth. & Hook. f. Gen. Pl.* vol. i. p. 841.)

Begonia (Gaerdtia) *glaucophylla*; glaberrima, caulibus elongatis pendulis ramosis albo-maculatis, foliis petiolatis oblongo-lanceolatis acuminatis marginibus undulatis penninerviis, basi rotundatis v. cordatis, supra læte subtus pallide viridibus, paniculis effusis pedunculatis amplis multifloris nutantibus pendulisve, bracteis amplis ovatis floribusque magnis læte roseis; fl. masc. sepalis 2 late ovatis obtusis, petalis 2 sepalis multo minoribus lineari-oblongis obtusis incurvis, staminibus numerosis toro parvo insertis, filamentis brevissimis liberis quam antheras lineari-obovatas apice retusas multoties brevioribus; fl. fœm. sepalis 4 late ovatis obtusis concavis, styli ramis 3 brevibus, fasciis papillarum bis tortis cinctis, ovarii placentis 2-fidis segmentis extus solum ovuliferis, capsula late 3-alata, alis rotundatis roseis sepala æquantibus, ala una ceteris multo majore.

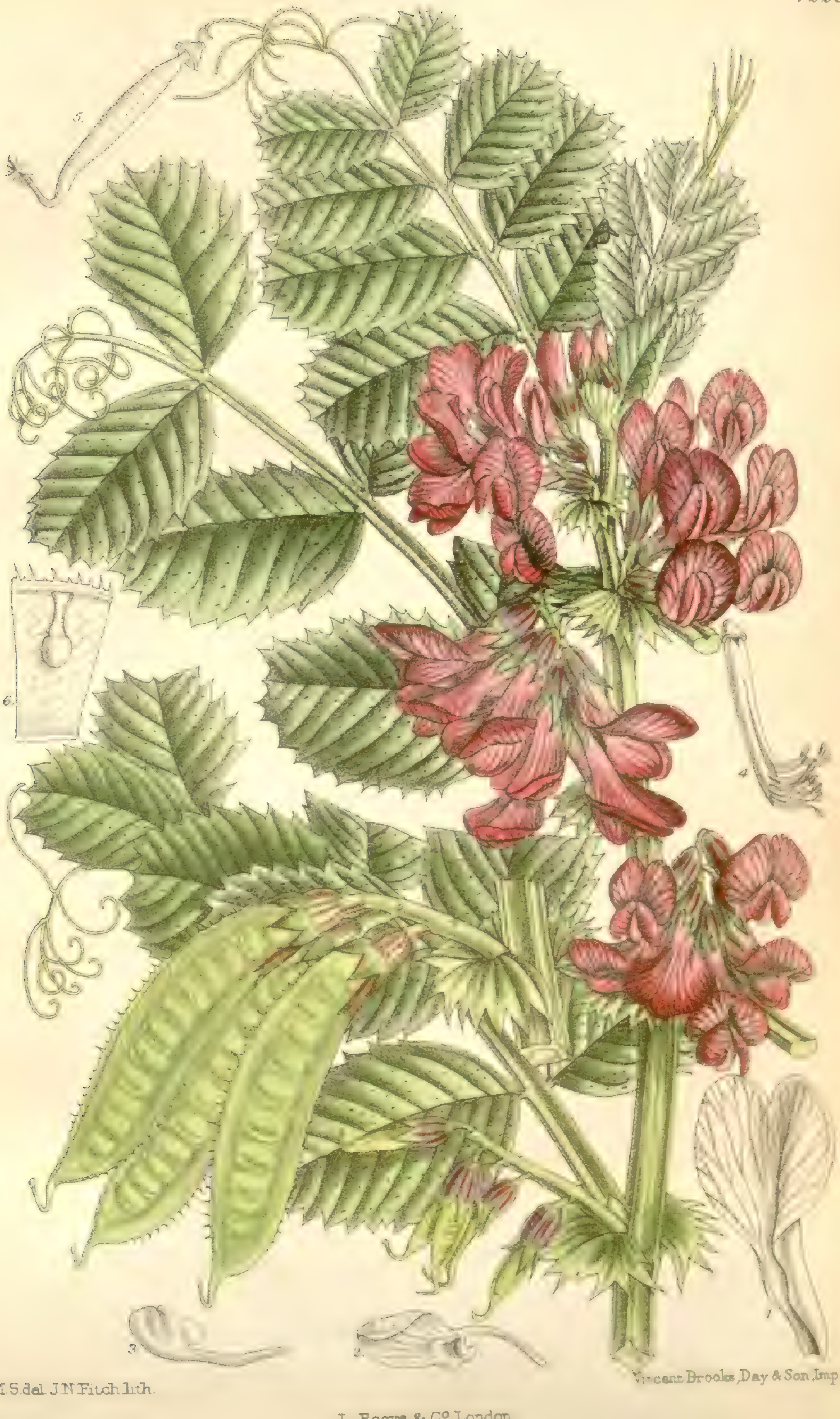
It is with hesitation that I propose the establishment as a species, of a *Begonia* of which neither the fatherland nor the history is known; and which moreover may possibly be a hybrid. It seems however that so fine a plant as that known at Kew and long cultivated and widely distributed as *B. glaucophylla* should be represented by a good figure, such being the only means of insuring the recognition of a member of this enormous and difficult genus. That it belongs to the American section of the genus *Gaerdtia*, A.DC. (genus of Klotzsch), is I think certain, though differing from the character given in the Prodromus and by Klotzsch, in having only four sepals in the female flower, all others hitherto described having five. Two species of the section *Gaerdtia* are figured in this work. The one *B. undulata*, Plate 2723, with leaves a good deal like those of *B. glaucophylla*, but very small white flowers and narrow wings to the fruit; the other, *B. Kunthiana*, Plate 5284, is totally different in habit and foliage, and has few large white flowers with obovate male petals.

The nearest described ally of *B. glaucophylla* is probably *B. maculata*, Raddi, better known as *B. argyrostigma*,

Fisch., under which name it is figured in the Botanical Register (Plate 666); this differs in its deeply unequally cordate leaves purple beneath, with white ocellate spots above, and a stout cartilaginous margin; the flowers too are quite small, and very pale pink, with five male sepals about a quarter of an inch long, and narrow subequal wings of the fruit. The white spots in the stem of *glaucophylla* indicate to me the possibility of its being a hybrid between the *B. maculata* and some other species.

B. glaucophylla, grown in a basket, is a magnificent plant, from its long pendent branches, bright shining leaves, and copious clusters of highly ornamental flowers; as stated above it has for years been in cultivation at Kew.—*J. D. H.*

Figs. 1 and 2, Front, and 2, back view of stamen; 3, style arms; 4, transverse section of ovary:—*all enlarged.*



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Tab. 7220.

VICIA NARBONENSIS.

Native of Eastern Europe and Western Asia.

Nat. Ord. Leguminoseæ.—Tribe Vicieæ.

Genus Vicia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 524.)

Vicia *narbonensis* ; annua, robusta, glabra v. sparsim pilosa, caulibus 4-gonis angulis incrassatis, stipulis auriculæformibus dentatis pectinatisve, foliis inferioribus uni-superioribus 2–4-jugis, rachi valida apice ramoso-cirrhifera, foliolis oblongis v. ovato v. oblongo-obovatis crassiusculis integris v. dentatis nervis impressis, floribus 2–5 in racemum brevem dispositis, calycis lobis subulato-lanceolatis recurvis, corolla calyce triplo longiore sordide rubra v. violacea striata, stylo infra apicem barbato, legumine late lineari compresso apice incurvo breviter rostrato, margine utroque setifero setis basi bulbosis, seminibus globosis v. oblongis lævibus v. rugulosis.

V. narbonensis, *Linn. Sp. Pl.* 737; *DC. Prodr.* vol. ii. p. 364; *Koch, Synops. Fl. Germ.* 215.

V. serratifolia, *Jacq. Fl. Austr. App.* t. 8; *Sturm, Flora Deutschl.* vol. viii. t. 32.

V. narbonensis *et* serratifolia, *Boiss. Fl. Orient.* vol. ii. pp. 577, 578.

The chief interest attaching to *Vicia narbonensis* rests in its having been supposed to be the origin of the common Bean (*Vicia Faba*, Linn. ; *Faba vulgaris*, Moench.). For this supposition the two weightiest arguments are (1) that the two plants belong to, and are the only species of one and the same section of *Vicia* ; and (2) that *V. Faba* is said to have been found wild within the same area as that covered by *V. narbonensis*, viz. the desert of Mungan, in Mazanderan on the southern shores of the Caspian Sea, where it was collected by Lerche, a Russian traveller, whose specimen is preserved in the Herbarium of the St. Petersburgh Botanical Gardens. With regard to the first argument, it is much invalidated by the fact of the differences in almost every organ of the two species, especially in the strongly nerved, usually serrated leaflets of *V. narbonensis*, with many very spreading nerves and strongly reticulate nervules, and its flattened pods, which are remarkable for the little bristles with bulbous bases along both sutures; and of which bristles I find no traces in the cultivated *V. Faba*. On the other hand,

V. narbonensis, which has an immense geographical range, in cultivated and virgin soil, from Southern France to the Caucasus, and from North Africa to Arabia, Persia, and North India, is a variable plant, the stipules being sometimes almost entire, the number of leaflets varying from two to eight and from quite entire to acutely deeply toothed. Their nervation too varies, though I never find the few almost straight nerves of *V. Faba*, the leaflets of which are three-nerved from the base. Then again, though *V. Faba* was no doubt found apparently wild by Lerche, there is no evidence that it was indigenous; and Boissier, whose knowledge of the Oriental Flora was unrivalled, expressly says that he never saw it in an indigenous state. The only author who expressly claims to have seen *V. Faba* wild is Munby, who includes it in his "Catalogus Plantarum in Algeria sponte nascentium," as being found at Oran. His specimen is in the Kew Herbarium, and ticketed by himself, "*Vicia Faba*, L., spontanea in pascuis argillosis, Figuia, Oran, Maii, 1865," but Cosson, whose knowledge of Algerian plants ranked with Boissier's of Oriental, affirms that he has never seen a wild specimen from North Africa.

For some of the above information I am indebted to M. De Candolle's valuable "Origine des Plantes Cultivées," where all the very earliest authorities for the history of the cultivated bean are given, together with much interesting information. This author does not favour the hypothesis of *Vicia narbonensis* being the origin of the Bean; but rather appears to consider the two plants as generically distinct. On the contrary, Bentham, who made the Leguminosæ a life-long study, says in the "Genera Plantarum" (vi. p. 525) that *V. Faba* only differs from *narbonensis* in the thicker subfleshy or coriaceous pericarp, and is perhaps a race of that species produced by cultivation.

The specimen of *V. narbonensis* here figured was raised from seed by Messrs Sutton and Co., the eminent seedsmen, and sent by them to Kew for determination in June of last year.—*J. D. H.*

Fig. 1. Standard; 2, wing; 3, keel; 4, stamens; 5, portion of ovary and ovule:—*all enlarged.*



W.G. del. J.N Fitch lith.

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Tab. 7221.

NEOBENTHAMIA gracilis.

Native of Eastern Tropical Africa.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Neobenthamia, *Rolfe in Gard. Chron.* 1891, vol. ii. p. 272.

Neobenthamia *gracilis;* terrestris, caulibus elongatis ramosis flexuosis sarmentosis foliosis, foliis lineari-elongatis acuminatis basi vaginantibus recurvis, floribus in racemum brevem strictum terminalem breviter pedunculatum dispositis patentibus albis longe pedicellatis, bracteis parvis setaceis, perianthii campanulati sepalis petalisque latioribus oblongis obtusis apicibus recurvis, labello a basi patente sepalis paullo longiore sessili obovato-oblongo subtruncato marginibus crispatis, disco medio aureo et maculis ruberis 2-seriatim dispositis ornato basi puberulo, columna breviuscula crassa mutica, clinandrio parvo, anthera subhemisphærica umbonata, polliniis 2 globosis inæqualiter 2-fidis (v. 4 hemisphæricis uno cujusvis paris minore) glandula rotundata squamæformi breviter stipitatis.

N. gracilis, *Rolfe, l.c.*

A very singular terrestrial orchid, differing much in habit from any hitherto described, though clearly I think belonging to the tribe *Vandeæ*, subtribe *Cymbideæ*, as Mr. Rolfe has determined. The long tufted stems, which attain four feet, are branched sparingly and are clothed with leaves almost throughout with grassy flaccid leaves. They do not root but apparently rest for support on neighbouring bushes, for under cultivation they require to be tied to a stake. The leaves are subdistichous, and droop, much as in some narrow-leaved *Cymbidia*, and the raceme is terminal as in that genus, from which *Neobenthamia* differs conspicuously in the shorter hardly spreading perianth and the lip not being erect, nor embracing the column, but spreading from the base and slightly recurved beyond the middle. The position of the genus in the "Genera Plantarum" should I think be next to *Cyperorchis*, a genus with difficulty distinguishable from *Cymbidium*, but of which the long perianth segments do not spread except at the tips.

In naming this plant *Neobenthamia*, Mr. Rolfe has paid a well-merited tribute to the excellency of my late colleague

Mr. Bentham's work, especially as regards the revision of the *Orchidea* in the "Genera Plantarum," which has been justly described as "a masterpiece of research and scientific taxonomy." The "neo" was very judiciously added, in order to avoid confusion with the two previously founded (though abandoned) genera named *Benthamia*, one of which (which still bears in all gardens the honoured name) being a species of *Cornus*; the other is a *Herminium*, which genus again will I doubt not in a future "recensi Orchidearum" have to be merged into *Habenaria*.

Neobenthamia is one of Sir John Kirk's many discoveries in the Zanzibar kingdom; living plants of it were sent by him to the Royal Gardens in 1884, which flowered in a stove in February, 1890.—*J. D. H.*

Fig. 1, Lip and column; 2, front view of column; 3, anther; 4 and 5, pollinia:—*all enlarged.*

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Tab. 7222.

CEREUS giganteus.

Native of Southern California.

Nat. Ord. Cacteæ.—Tribe Echinocacteæ.

Genus Cereus, *Haw.*; (*Benth. & Hook. f. Gen. Pl.* vol. i. p. 849.)

Cereus (Lepidocereus) *giganteus*; erectus, cylindricus, simplex v. parce ramosus et candelabriformis, basin et apicem versus attenuatus, ramis paucis erectis, vertice applanato tomentoso, costis infra sub 13 sursum 18–21 rectis acutatis, sinubus acutis, areolis prominulis ovato-orbiculatis junioribus albido-tomentosis, aculeis rectis basi bulbosis tenuiter sulcatis, radialibus 10–16, inferioribus brevioribus, summis 4–5-cæteris multoties longioribus validis, floribus apicem versus caulis aggregatis, ovario ovoideo, sepalis oblongo-ovatis obtusis imbricatis nudis v. parce aculeatis tecto, calycis tubo mediocri, sepalis lineari-oblongis obtusis arcte imbricatis inferioribus in axillis lanigeris, intimis 10–15 apicibus undulatis spathulatis, petalis 25–35 obovato-spathulatis convexis recurvis albis, staminibus numerossisimis, antheris dense congestis, stylo incluso, stigmatibus 12–18 linearibus obtusis, bacca obovoidea v. pyriformi, pericarpio demum 3–4-valvi, pulpa coccinea, seminibus numerossisimis oblique obovoideis lucidis exalbuminosis, cotyledonibus foliaceis tramatis.

C. giganteus. *Engelm. Cact. of Emory Rep.* p. 22 (1848); *in Am. Journ. Sc. & Arts, Ser.* ii. vol. xiv. (1852) p. 335; *Synops. of Cactee of U. States, in Proc. Am. Acad. Arts & Sc.* vol. iii. (1856) p. 287; *in Rep. of Whipple's Railroad Surv.* vol. iv. (1856) p. 36; *in Rep. of Emory Mex. Boundary Survey*, vol. ii. pt. i (1859) p. 42, t. LXI., LXII., *et Tab. Front. Torrey & A. Gray, Bot. Works of G. Engelm.* pp. 113, 122, 125, 140, 161, 202, t. LXI. LXII.; *Bot. Zeit.* 1854, p. 616.

The flowering of this wonderful plant in England must be considered one of the triumphs of Horticulture. It has been long known to science, very imperfectly at first, from accounts brought by W. H. Emory of a gigantic Cactus which he saw in 1847 during his military reconnaisance from the Missouri River to San Diego in California, and who figured it in several plates that accompany his Report (pp. 72—79). From seeds brought by Mr. Emory to Dr. Engelman, of St. Louis, that botanist pronounced it to be probably a species of *Cereus*, but it was not till Dr. Parry accompanied a second expedition to the same regions, in 1852, that the plant was scientifically known. From Dr. Parry's notes Dr. Engelman was enabled to describe the

species botanically in the American Journal of Science and Arts (November, 1852), when he named it *C. giganteus*. In that account he observes that "it is no doubt the same plant of which Humboldt makes mention in his work on New Spain (vol. ii. p. 225), where he says that the Spanish missionaries found at the foot of the Californian mountains nothing but sand or rocks, on which grew a cylindrical Cactus (Organos del Tunal) of extraordinary height." In a subsequent account of the plant in the Report of Whipple's Expedition on a route along the thirty-fifth parallel, at p. 37, doubts are expressed as to the probability of Engelman's surmise being tenable, on the ground of Humboldt having given no other characters for his "Organos del Tunal" beyond its size and edible fruit; but surely if it be granted, as it must be, that *C. giganteus* is the tallest of all *Cacti*, and bears an edible fruit, it is natural to suppose that it is that referred to by Humboldt's informants, and that to this illustrious traveller we owe the first allusion to its existence.

C. giganteus inhabits the dreariest and most torrid deserts of the American continent, in Southern California and Arizona, from the William's and Gila rivers to Sonora, Lat. 35° to 28°. N. There trees of it are described as "giving the landscape a very peculiar appearance. As far as the eye can reach, in the valleys or on the mountains, little else but rocky boulders, and the stately yet awfully sombre aspect of this *Cereus* can be seen." Individual plants are said to attain a height of sixty feet, with scarcely a branch, and nearly two in diameter, and as if to add to their uncomeliness the thick fleshy substance of the upper part frequently rots away, exposing a woody interior framework, which breaks up into a crown of brush-like fragments that wave about in the wind. Young plants are globose and very slow of growth, they are found only under the shade of the "Green bark Acacia," *Cerridium floridanum*, a starved bushy tree that is scattered over the desert. Dr. Engelman mentions having one such infant Cereus of this species which he believed to be eight or ten years old, but which was only five or six inches in diameter.

The flowers, which are produced when the plant attains

a height of ten or twelve feet, appear from May to July, and are succeeded by pear-shaped fruits three inches long, which burst open by three or four valves, exposing a bright red pulpy edible core full of seeds; this core falls to the ground, the valves being retained on the tree and reflexed, when they resemble the petals of a scarlet flower. The pulp is sweet, somewhat resembling a fig, and is greedily eaten by the Indians, both raw and made into a kind of molasses and conserve. The flesh of the plant itself is bitter, in this respect differing from that of most *Cacti*, of which the flesh is acidulous. The Indian name of the plant is Suwarrow or Saguara, and the Mexican Pitajaya.

For the above information I am indebted to the notes and observations of Drs. Engelman and Parry, scattered through the various Reports and papers cited above.

The stem of the Kew plant is fourteen feet high and four and a half in girth, at the thickest part; on its arrival it weighed twelve hundred weight and had no roots. It was purchased from Messrs. A. Blane and Co., Nurserymen, of Philadelphia, who own a piece of land in Mexico where this species grow. On arrival in 1890 it was potted and placed in the south end of the Palm House, where it flowered in July, 1891.—*J. D. H.*

Fig. 1, Apex of lower sepal; 2, inner sepal; 3, stigmas:—*all enlarged.*



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Tab. 7223.

DIANTHUS callizonus.

Native of Transylvania.

Nat. Ord. Caryophylleæ.—Tribe Sileneæ.

Genus Dianthus, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 144.)

Dianthus (dentati) *callizonus*; perennis, glaberrimus, multicaulis, caulibus ad apices fere foliosis, foliis patulis glaucis linearibus v. lineari-lanceolatis acuminatis v. obtusis carinatis uninerviis margine integerrimis lævibus v. scaberulis, floribus amplis solitariis breviter pedunculatis roseis zona interiore rubella albo punctata, bracteis 2–4 ovato-lanceolatis obtusis v. acutis herbaceis erecto-patentibus calyce paullo brevioribus v. æquilongis, calycis cylindracei rubro striati lobis brevibus ovatis ciliolatis v. glabris acutis v. subaristatis petalorum lamina calyce longiore late cuneata striata apice crenata basin versus pilis erectis longis laxe barbata, stylis brevibus inclusis.

D. callizonus, *Schott et Kotschy, ex Schott in Bot. Zeit.* vol. ix. (1851) p. 192; *Walp. Ann.* vol. iv. p. 275.

D. nitidus, *Baumg. Enum. Storp. Transylv.* vol. i. p. 390 (*non Kit.*) *ex Nym Ansp.* 101.

This lovely pink is a native of the calcareous alps of Transylvania, called Piatra Krajuluj, at an elevation of six thousand to seven thousand five hundred feet above the sea, where it was first made known by the celebrated botanical collector Kotschy. According to Nyman, however, it is the *D. nitidus* of Baumgarten's Transylvanian Flora, published in 1816, who cites as the habitat of *D. nitidus* the very mountains and elevation which *D. callizonus* inhabits. The affinity of *D. callizonus* is with *D. alpinus* (Plate 1205 of this work) which has similarly solitary flowers, bracts, calyx, crenate petals with long hairs on the surface, and a deep red zone of colour at their bases speckled with white; but *D. callizonus* is a very much finer and more robust plant, with larger flowers and more glaucous leaves, like those of *D. cæsius*; the flowers, too, are of a paler colour, though Mr. Dewar informs me that they do occur of a brighter colour than they are represented in the figure here given, which faithfully represents the plant as placed before the artist.

March 1st, 1892.

According to a note by the late Mr. Ball, in his Herbarium now at Kew, that able European botanist who had botanized in Transylvania, regarded *D. callizonus* as hardly different from *D. nitidus*, which is a much taller, more slender plant, with much smaller flowers.

D. callizonus was purchased from F. Sundermann, of Bavaria, in 1889, and flowered in the Rockery of the Royal Gardens in June, 1891, where, as Mr. Dewar informs me, it flourishes in an Eastern exposure.—*J. D. H.*

Fig. 1, Bracts and calyx, *of the natural size*; 2. petal; 3, stamens and pistil; 4 and 5, anthers:—***all enlarged.***



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Tab. 7224.

GONGORA gratulabunda.

Native of New Grenada.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Gongora, *Ruiz. & Pav ; (Benth. et Hook. f. Gen. Pl.* vol. iii. p. 549.)

Gongora *gratulabunda ;* pseudobulbis oblongis alte acute costatis, foliis oblanceolatis caudato-acuminatis 5-nerviis, racemo laxifloro, pedunculo rachi pedicellisque elongatis rufo-fuscis, bracteis parvulis, floribus pendulis flavidis fusco rubro creberrime maculatis, sepalorum marginibus revolutis, dorsali oblongo-lanceolato acuto erecto, lateralibus reflexis ovato-lanceolatis acutis, petalis cultriformibus acuminatis columna brevioribus, labelli hypochilo cuneiforme tumido biaristato basi ecornuto, epichilo hypochilo æquilongo et aquilato ovato tumido undulato basi dorso saccato.

G. gratulabunda, *Reichb. f. in Bot. Zeit. L.* (1857) 157 ; *Xen. Orchid.* vol. ii. p. 169, t. 170, f. 3.

Of the species of *Gongora* hitherto described and figured *G. gratulabunda*, appears to me to be most nearly related to *G. bufonia*, Lindl., Bot. Reg. v. xxvii. (1841) t. 2, and v. xxxiii. (1847) t. 17, differing in the much larger and very differently coloured flowers ; those of *G. bufonia* being more or less of a vinous red and unspotted. In the form of the lip, from which the chief specific characters in the genus are taken by both Lindley and Reichenbach, they entirely agree, except that the gibbosities at the base of the hypochile in *G. bufonia* are entirely absent in *G. gratulabunda*. In this respect the latter agrees with *G. portentosa* (Tab. 6284) a species with very broad sepals, and with the epichile of the lip reduced to a subulate process. Other very closely allied forms of the species are figured by Reichenbach in his Xenia Orchidacea, as *G. retrorsa*, *stenoglossa*, *Seideliana aromatica* and *superflua*, all natives of the Northern States of South America, and very difficult to distinguish.

G. gratulabunda is, according to Reichenbach, a doubtful native of New Grenada. It was discovered by Warscewicz, and was flowered in January of 1857 by the

famous collector of Orchids, the late Consul Schiller, of Hamburg.

The drawing was made from a plant procured from Messrs. F. Sander and Co., of St. Albans, which flowered in the Royal Gardens in June of last year, in a tropical house.—*J. D. H.*

Fig. 1, Column with petals; 2, lip; 3, pollinia:—*all enlarged.*

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Tab. 7225.

CHRYSANTHEMUM ROTUNDIFOLIUM.

Native of Hungary.

Nat. Ord. Compositæ. Tribe Anthemideæ.

Genus Chrysanthemum, *Linn.* (*Benth. & Hook. f. Gen. Pl.* vol. ii. p. 424.)

Chrysanthemum (Pyrethrum) *rotundifolium*; perenne glabriusulum caule acute 5–6-gono, foliis radicalibus longe petiolatis ovato- v. cordato-subrotundis crenato-dentatis, caulinis ovatis serratis in petiolum latum angustatis supremis floralibusque sessilibus lanceolatis argute dentatis, floribus corymbosis, pedicellis elongatis acutangulis, involucri bracteis oblongis late scariosis margine nigris denticulatis, floribus glaberrimis, ligulis albis pollicaribus linearibus apice 3-denticulatis, acheniis teretibus striatis cupula membranacea lacera coronatis.

C. rotundifolium, *Waldst. et Kitaib., ex Willd. Sp. Pl.* vol. iii. p. 2144. *et Pl. Rar. Hungar.* vol. iii. p. 262, t. 236; *Wahlenb. Fl. Carpath.* 275. n. 889; *Baumgart. Enum. Strip. Transylv.* vol. iii. p. 107.

C. montanum, *Geners. Fl. Scepus. Elench.* n. 808 (*non Linn.*)

Leucanthemum rotundifolium, *DC. Prodr.* vol. vi. p. 46.

Matricaria rotundifolia, *Poir. Dict. Suppl.* vol. iii. p. 608.

Pyrethrum ? Waldsteinii, *Janka, Adat. Fiume Floraz. Ismeret.* 1874, 177, *ex Nym. Consp.* 372.

Tanacetum Waldsteinii, *Schultz Bip. ex Nym. l. c.*

Chrysanthemum rotundifolium is a very showy Hungarian Michaelmas Daisy, differing much from those in general cultivation by its strict rigid habit, acutely angled stem and branches, corymbose many-flowered inflorescence and broad leaves. In habit it belongs to the section *Pyrethrum* (genus *Pyrethrum* of Gærtner), which includes most of the perennial white-flowered species of *Chrysanthemum*, but it differs from that section as defined by modern authors, in the terete, not ribbed or angled achene, and in the cupular pappus, and it accords with no section as hitherto defined.

C. rotundifolium is a native of the mountain valleys of Hungary, Transylvania, and Bucovina. It is rather a low-growing species, not exceeding two feet high in the Royal

Gardens, where it flourishes both in the Herbaceous ground and in the Rockery, flowering freely throughout the summer. The plant was procured from F. Sundermann, of Bavaria, in 1890.—*J. D. H.*

Fig. 1, Involucral bract; 2, ray-flower; 3, achene of the same; 4, disk-flower; 5, stamens; 6, style of disk-flower:—*all enlarged.*



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Tab. 7226.

LYSIMACHIA paridiformis.

Native of China.

Nat. Ord. Primulaceæ. Tribe Lysimachieæ.

Genus Lysimachia, *Linn.*; (*Benth. et Hook. f. Gen. Plant.*, vol. ii. p. 635.)

Lysimachia (Tridynia) *paridiformis*; erecta, sparse puberula, caule basi simplici nudo superne verticillatim ramoso, foliis verticillatis sessilibus ellipticis v. obovato-lanceolatis acuminatis subtus glaucescentibus, floribus in capitula pedunculata mullibracteata congestis majusculis aureis, sepalis subulato-lanceolatis glandulis linearibus notatis, corolla campanulata 5-loba, tubo intus pulvereo lobis ovatis obtusis, filamentis inæquilongis infra medium in tubum pulveream confluentibus, antheris oblongis inclusis, ovariio fere globoso.

L. paridiformis, *Franch. in Bull. Soc. Linn. Paris* (1884) p. 433: *Forbes & Hemsl. in Journ. Linn. Soc.* vol. xxvi. (1889) p. 55.

The genus *Lysimachia* is more numerously represented in China than in any other country of the globe, no fewer than thirty-five species being enumerated in Forbes and Hemsley's enumeration of the plants of that country, to which, no doubt, many more are to be added. Proceeding eastward or westward from China the number rapidly decreases to nine in the whole continent of North America, fourteen in British India, six in the Oriental region of Boissier, and eight in Europe proper.

L. paridiformis belongs to the section *Tridynia* as adopted by Asa Gray in his Botany of the Northern United States of America, and which is characterized by the opposite or whorled sessile gland-dotted leaves, yellow corolla marked as well as the calyx by glandular streaks, unequal filaments monadelphous below, without interposed staminodes, and few seeded five-valved capsules. Of described species it is perhaps nearest to *L. quadrifolia* of the Eastern United States, which has leaves in whorls of three to six, and foliaceous bracts amongst the flowers, but in that species the flowers are very small, and have long axillary filiform pedicels.

L. paridiformis was raised at the Royal Gardens from seeds sent by Dr. Henry, from Ichang, in China, on the

Yangtse Kiang river, in 1889, and the plants raised from them flowered in the open border in July, 1891. It appears to be perfectly hardy. It has the habit, Mr. Dewar informs me, of losing its basal leaves when coming into flower.—*J. D. H.*

Fig. 1, Calyx; 2, section of flower with stamens and pistil; 3 and 4. stamens; 5, pistil:—*all enlarged.*

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Tab. 7227.

LILIUM primulinum.

Native of Upper Burma.

Nat. Ord. Liliaceæ. Tribe Tulipeæ.

Genus Lilium, *Linn.* (*Benth. & Hook. f. Gen. Pl.* vol. iii. p. 816.)

Lilium (Eulirion) *primulinum;* bulbo magno globoso squamis lanceolatis, caule stricto erecto 3–4-pedali, foliis sparsis dissitis sessilibus lanceolatis, floribus paucis corymbosis vel umbellatis pedicellis longis cernuis, perianthio infundulari primulino-luteo immaculato 5–6-pollicari, segmentis oblanceolato-oblongis subconformibus dimidio superiori subrecurvis staminibus perianthio paulo brevioribus, antheris linearibus brunneis, stylo stamina longe superante.

L. neilgherrense, *Collett et Hemsl. in Journ. Linn. Soc.* vol. xxviii. p. 138, *non Wight.*

L. claptonense, *Hort. Low.*

This is another new Lily which has been imported by Messrs. Hugh Low & Co., from the Shan States, in Upper Burma. Its nearest allies are *L. nepalense*, Bot. Mag., tab. 7043, and *L. neilgherrense*, Bot. Mag., tab. 6332. From the latter it differs by its shorter and more open tube, brown anthers, and style as long as the perianth segments. It is mentioned in Collett and Hemsley's paper in the Journal of the Linnean Society under the name of *neilgherrense*, as having been collected at Boni, in the Shan States, by Mr. Boxall. It forms a connecting link between the two sections *Eulirion* and *Martagon* by having the perianth-segments subrecurved in the upper half. Our drawing was made from a specimen flowered by Messrs. Hugh Low & Co , in September, 1891.

Descr. *Bulb* large, globose; scales lanceolate. *Stem* stiffly erect, glabrous, three or four feet long. *Leaves* scattered, lanceolate erecto-patent, sessile, glossy, bright green, three or four inches long. *Flowers* about three, arranged in a corymb or umbel, on long cernuous pedicels with a large lanceolate leaf at the middle. *Perianth* openly funnel-shaped, pale yellow, unspotted, tinted out-

side with green in an early state, five or six inches long; segments oblanceolate-oblong, the outer and the inner nearly uniform, above an inch broad at the middle, connivent in an open funnel in the lower half, subrecurved in the upper half. *Stamens* rather shorter than the perianth; anthers linear, brown. *Style* much overtopping the anthers and reaching to the very tip of the perianth-segments.—*J. G. Baker.*

Fig. 1, An anther, front view; 2, an anther, back view; 3, pistil complete:—*all enlarged.*



M.S.del, J.N.Fitch, lith.

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Tab. 7228.

HABENARIA LONGECALCARATA.

Native of the Western Ghats of India.

Nat. Ord. Orchideæ.—Tribe Ophrydeæ.

Genus Habenaria *Willd.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 624.

Habenaria *longecalcarata;* foliis radicalibus patulis oblongis acutis v. acuminatis, scapo vaginato 1–2-floro, floribus longe pedicellatis, bracteis elongatis pedicellos vaginantibus eosque æquantibus v. superantibus, ovario elongato curvo alte costato, sepalo dorsali oblongo obtuso concavo viridi, lateralibus longioribus reflexis falcatis obtusis pallide virescentibus, petalis erectis sepalo dorsali æquilongis lineari-oblongis obtusis viridibus labello sepalis multoties longiore cuneato trilobo albo, lobis lateralibus cuneatis truncatis erosis, marginibus recurvis, intermedio parvo paullo breviore lineari obtuso, calcare longissimo viridi labello 3–4 plo longiore, ore constricto, antheræ obtusa cruribus incurvis, rostello magno erecto obtuso, polliniis oblongis curvis stipite bialato, glandula minima, processubus stigmatosis porrectis decurvis.

H. longecalcarata, *A. Rich. in Ann. Sc. Nat. Ser.* 2, vol. xv. p. 71, t. 3; *Wight Ic. Pl. Ind. Or.* t. 925; *Dalz. & Gibs. Bomb. Fl.* p. 268; *Hook. f. Fl. Brit. Ind.* vol. vi. p. 141 *in part, et* p. 197.

H. longicorniculata, *Grah. Cat. Bomb. Pl.* p. 202.

This is one of three closely allied long-spurred *Habenarias* confined to the Western Ghats of the Peninsula of India, and characterized by their large flowers and the great length of their spurs, and which have been much confounded in botanical works. They are (1) *H. longicornu*, Lindl. (H. montana, *A. Rich. in Ann. Sc. Nat. Ser.* ii. *vol.* xv. *t.* 73), which has acuminate leaves, bracts shorter than the long-beaked ovary, three to eight-flowered scapes, the lip not longer than the lateral sepals, and the spur about twice as long as the ovary; (2) *H. decipiens*, Wight Ic. Pl. Ind. Or. vol. v. Pt. i. p. 14 (H. montana, *Wight l. c.* t. 927, *not of A. Rich.*) with more numerous (six to ten) smaller flowers, very short pedicels, the lip rather longer than the sepals, and a spur four or five times as long as the beaked ovary; and (3) the plant here figured. This latter I assume to be the same as *H. longicorniculata* of Graham in his "Catalogue of Bombay Plants" (though his

description might apply to any of the three species), because he gives as its habitat, Kandalla (a suburb of Poona), in the South Concan, where Dalzell had collected *H. longecalcarata*.

H. longecalcarata has been found along the whole range of the Ghats, from Poona to Travancore, ascending to about five thousand feet, growing in open places. The specimen here figured was communicated by the Rt. Hon. Sir Mountstuart Grant Duff, Bart., G.C.S.I., F.R.S., late Governor of Madras, who flowered it at his residence, York House, Twickenham, in September, 1891. I may remind readers that the garden of this same York House was, when occupied by His Royal Highness the Comte de Paris, famous for its collection of terrestrial *Orchideæ*, see *Orphrys Speculum* and *O. lutea*, Plates 5868 and 5941, and *Serapias Lingua*, Plate 5868, all of this work.

H. longecalcarata has the merit of remaining long in flower. The specimen here figured was received in flowering state in September, 1891, and was still flowering in the cool orchid house of Kew in the following November.—*J. D. H.*

Fig. 1, Petal; 2, front view of column, showing its ascending arms tipped with the glands of the pollinia, the interposed rostellum, and the lip of the anther behind, also the two stigmatic appendages one on each side of the contracted mouth of the spur; 3, side view of the same; 4, the same with the rostellum removed; 5, a pollinium:—*all enlarged.*



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Tab. 7229.

CIRRHOPETALUM ORNATISSIMUM.

Native of Assam and the Eastern Himalaya.

Nat. Ord. Orchideæ. Tribe Epidendreæ.

Genus Cirrhopetalum, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.*, vol. iii. p. 504.)

Cirrhopetalum *ornatissimum*; rhizomate robusto, pseudobulbis ovoideis tetragonis, folio elliptico-lanceolato, scapo suberecto paucifloro, bracteis subulato-lanceolatis, floribus magnis pallide carneis rubro-striatis, sepalo dorsali ovato-lanceolato basi truncato pilis rubris longe ciliato, lateralibus dorsali duplo longioribus attenuato-acuminatis, petalis ovatis fasciculo palearum sanguinearum terminatis, labello breviter stipitato oblongo obtuso incrassato recurvo, columna longiuscula apicem versus utrinque **arista porrecta decurva instructa.**

C. ornatissimum, *Reichb. f. in Gard. Chron.* 1882, vol. ii. p. 424; *Warner Orchid. Album*, t. 369; *Hook. f. Fl. Brit. Ind.* vol. v. p. 773.

The general resemblance of this remarkable plant to the still more remarkable *C. Collettii* figured in this work in October of last year (Plate 7198), is obvious, notwithstanding the marked difference in their pseudobulbs and mode of growth; the pseudobulbs in this organ being in *ornatissimum* ovate and four-sided, in *Collettii* subglobose and deeply four lobed; and the scape in this being erect and arising from the side of the pseudobulb as usual in the genus, but in *Collettii* it is pendulous and arises from the young growths before the new pseudobulbs are developed. Other differences are to be found in the longer leaves of *C. ornatissimum*, the truncate base of the dorsal sepal, which is not tipped with a bunch of paleæ; in the shorter lateral sepals, and especially in the much less highly developed paleæ of the petals, in the scabrid ridges of the lip, and in the bristle-like appendages at the tip of the column not being strongly decurved.

C. ornatissimum was first described from specimens stated to have been received from Assam, the reputed native country of the specimen here figured; but as, according to a figure in the collection of drawings belonging to the Botanical Gardens of Calcutta, it is a native of

Sikkim, its more exact locality is probably the outer ranges of the Himalaya Mountains, from Sikkim eastwards. In the above-mentioned figure the sepals and petals are yellowish-green, and the red streaks are broken up into purple dots. In the plate given in Warner's Orchid Album the leaves are broadly elliptic with rounded retuse tips, dark green with no yellow margin, the bracts are longer and the flowers much larger, of a dull purplish blue, the lateral sepals end in longer tails, and the petals have an almost black purple centre and greenish border; it doubtless represents a variety.

C. ornatissimum was received at Kew from the Royal Botanical Gardens of Calcutta in 1890 (under the erroneous name of *Bulbophyllum Mannii*), and flowered in the tropical orchid house of Kew, in September, 1891.—*J. D. H.*

Fig. 1, Dorsal sepal; 2, paleæ of the petals; 3, column and lip; 4, lip; 5, anther:— *all enlarged.*



M.S. del. J.N. Fitch, lith.

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Tab. 7230.

STREPTOCARPUS Galpini.

Native of the Transvaal.

Nat. Ord. Gesneraceæ.—Tribe Cyrtandreæ.

Genus Streptocarpus, *Lindl.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1023.)

Streptocarpus *Galpini;* folio solitario radicali sessili ovato-oblongo obtuso integerrimo basi subcordato supra sericeo-villoso inter nervos profunde impressos tumidis, subtus carneo nervis validis rubris, scapis plurimis pedicellis calycibus ovariisque dense glanduloso-pubescentibus, floribus racemosis, pedicellis robustis elongatis erectis v. patulis, calycis 5-partiti segmentis linearibus obtusis tubo corollæ multo brevioribus, corollæ subcampanulatæ violaceæ tubo lente incurvo, lobis 5 æqualibus patentirecurvis orbiculatis tubo æquilongis, filamentis pilosis, antheris reniformibus, staminodiis filiformibus glabris, stylo brevi glanduloso stigmate simplici.

S. Galpini, *Hook. f.* in *Hogg Journ. of Horticulture, N.S.* No. 593 (*November* 5, 1891, p. 388), fig. 76.

The plant here figured is the eleventh species of *Streptocarpus* that has appeared in this Magazine, and it differs from all previously described in the very short broad corolla tube, rendering the corolla almost campanulate, though with a curvature in the tube. In all other species the corolla has a cylindric and more or less elongate or a funnel-shaped tube, usually much longer than its lobes.

S. Galpini is one of the species of which the solitary leaf is developed from one of the cotyledons of the embryo, as described under *S. Dunnii*, Tab. 6903, and as is the case in *S. Sandersii*, Tab. 5251, and *S. polyanthus*, Tab. 4850; and like them is a native of the Eastern South Africa. It was discovered in the Transvaal by Mr. Ernest E. Galpin, of Barbertown, to whom the Royal Gardens are under great obligations for many new plants both living and dried.

In a letter to Mr. Watson, Assistant-Curator of the Royal Gardens, Mr. Galpin describes this *Streptocarpus* as growing in crevices of cliffs and under rocks only on the tops of the mountains, just below the brows of the highest peaks, as on the "Bearded Man," which forms one of the boundaries of Swazieland, thirty miles from Barberton.

April 1st, 1892.

Mr. Galpin mentions a crimson-flowered species with leaves eighteen inches long by thirteen wide, and numerous flowers, as growing in profusion on the same mountain. Can this be *S. Dunnii*, mentioned above, which was found on the Spitzkop at three thousand six hundred to six thousand feet elevation? and the leaves of which attain, under cultivation at Kew, three feet in length and the flowers of which are bright rose-coloured.

The seeds of *S. Galpini* were received from Mr. Galpin in May, 1890, and the plants raised from them flowered in October of the following year in the Succulent House of the Royal Gardens. Mr. Watson has planted a row of this species along the margin of the Aloe bed in the same house, which will no doubt have a brilliant effect in the coming season.—*J. D. H.*

Fig. 1, Calyx and ovary; 2, base of corolla, stamens, and staminodes; 3, stamen; 4, ovary; 5, transverse section of ditto:—*all enlarged.*



M.C del. J.N.Burch. lith.

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Tab. 7231.

BEAUFORTIA sparsa.

Native of Western Australia.

Nat. Ord. Myrtaceæ.—Tribe Leptospermeæ.

Genus Beaufortia, *Br.*; (*Benth. & Hook. f. Gen. Pl.* vol. i. p. 705.)

Beaufortia *sparsa*; frutex, inflorescentia excepta glaberrima, foliis ½–¾ pollicaribus sparsis patulis elliptico-ovatis v. -lanceolatis subacutis nervosis, spicis axi centrali ramorum enactis oblongis densifloris, rachi calycibusque glabris v. pubescentibus, calycis tubo ½ poll. longo, lobis tubo subæquilongis rotundatis, petalis orbicularibus sepalis duplo longioribus, staminum fasciculis cujusvis floris ad 5 pollicaribus coccineis, ungue filiformi, antheris ad 7 longe stipitatis minutis globosis, connectivo crasso, valvis parvis orbicularibus, ovario 3-loculari vertice depresso villoso, stylo filiformi apice deflexo, loculis 1-ovulatis.

B. sparsa, *Br. in Ait. Hort. Kew, Ed.* 2. vol. xiv. p. 419; *DC. Prodr.* vol. iii. p. 211; *Schauer in Nov. Act. Nat. Cur.* vol. xxi. p. 14 (*errore* 18), *et in Lehm. Plant. Preiss.* vol. i. p. 149; *Benth. Fl. Austral.* vol. ii. p. 165; ***Illustr. Horticole.*** **1886, t. 594.**

B. splendens, *Paxt. Brit. Fl. Gard.* vol. xiii. p. 145, *cum Ic.*

This brilliant shrub was discovered at the close of the last century by Archibald Menzies, F.L.S., Surgeon and Naturalist to Vancouver's Expedition, in King George's Sound, South Western Australia, now the site of the town of Albany, a locality abounding in rare and beautiful plants, and especially noted as the single habitat for *Cephalotus follicularis*. The genus *Beaufortia* consists of twelve species, and is a member of the subtribe *Beaufortiæ* of *Myrtaceæ*, which is confined to Western Australia. The only other species that have been introduced into cultivation is *B. decussata*, Br., also a native of King George's Sound, and figured at t. 1733 of this work, and *B. Dampieri*, A. Cunn., t. 3272.

The curious inflorescence of this and allied Australian genera, and which presents the appearance of a spike the axis of which is produced beyond it into leafy branches, is the result of a consecutive series of closely contiguous leaves being reduced to bracts and bearing each a flower in its axil, the whole being hidden by the cataract

of pendulous bundles of stamens. In the case of *B. sparsa* there are about five bundles of stamens in each flower, and each bundle consists of a thread about an inch long bearing about eight long-stalked diverging filaments, of which two are opposite and placed considerably below five that terminate the thread; the filaments each bear a minute globose anther with a thick clavate connective and two lateral orbicular valves. In *B. Dampieri* the bundle of stamens is flattened, dilated above, and cleft into nine to fifteen filaments. This last is a most interesting plant, as being one of the first brought from Australia to Europe, in the little Herbarium formed by the great and accomplished navigator Dampier, at Shark's Bay, in 1699. In *B. decussata* again the bundle of filaments branches at the extremity into seven or more, and the anthers have conical or almost horn-shaped valves.

B. striata was introduced into England upwards of half a century ago, and is much less frequently cultivated than it deserves to be. It has long been a resident of the Temperate House at Kew. The plant from which the drawing is made is a compact shrub four feet high which flowered in September, 1891.—*J. D. H.*

Fig. 1, Leaf; 2, bract; 3, flower; 4 and 5, anthers; 6, pistils:—*all enlarged.*

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Tab. 7232.

LILIUM Lowii.

Native of Upper Burma.

Nat. Ord. Liliaceæ. Tribe Tulipeæ.

Genus Lilium, *Linn.* (*Benth. & Hook. f. Gen. Pl.* vol. iii. p. 816.)

Lilium (Eulirion) *Lowii;* bulbo magno globoso squamis lanceolatis, caule stricto erecto glabro 3–4-pedali, foliis perpluribus sparsis linearibus sessilibus, floribus circiter 3 cernuis longe pedunculatis, perianthio late infundibulari 3–4-pollicari segmentis oblongo-lanceolatis supra medium recurvis extus albis intus dimidio superiori albis immaculatis dimidio inferiori flavo viridi tinctis punctis pluribus minutis rubro-purpureis decoratis, genitalibus perianthio paulo brevioribus, antheris brunneis, stigmate vix antheras eminente.

L. nepalense, *Collett et Hemsl. in Journ. Linn. Soc.* vol. xxviii. p. 138, t. 22, *non D. Don.*

The exploration of Upper Burma has brought to light a new field for Lilies, and we are much indebted to Messrs. Hugh Low and Co. (after whom the present species is named) for the pains they have taken to bring them into cultivation. The nearest allies of the present plant are *L. nepalense* and *L. Bakerianum*. The former has been figured lately in the Botanical Magazine (tab. 7043), so that the two plants may easily be compared. The latter differs by its erect flowers, shorter stamens, and inner segments of the perianth much broader than the outer. It is figured (tab. 22), and the country where these new lilies grow is fully described, in a paper by General Collett and my colleague, Mr. W. B. Hemsley, F.R.S., in the twenty-eighth volume of the Journal of the Linnean Society. The collection made in this region by General Collett in 1887-88 contained 725 species of flowering plants, representing 460 genera and 109 natural orders. It appears that no less than four of these Burmese lilies are new species. Our drawing was made from a specimen flowered by Messrs. Hugh Low and Co. in July, 1891.

Descr. *Bulb* globose, two inches in diameter; scales

small, lanceolate. *Stem* glabrous, stiffly erect, three or four feet long. *Leaves* very numerous, scattered, sessile, linear, erecto-patent, two or three inches long. *Flowers* about three, corymbose or umbellate, on long cernuous peduncles with a linear leaf at the middle. *Perianth* openly funnel-shaped, three or four inches long; fully expanded limb three inches in diameter; segments oblong-lanceolate, the inner and outer nearly uniform, an inch broad at the middle, white with a slight greenish tinge on the outside, white without any spots inside on the spreading upper half, tinged with yellowish-green on the connivent lower half and covered except in the centre, with minute spots of claret-brown. *Stamens* about an inch shorter than the perianth; anthers large, linear, brown. *Stigma* just overtopping the anthers.—*J. G. Baker.*

Fig. 1, An inner segment of the perianth, *life-size;* 2, stamens and pistil; 3, a single anther; 4, ovary, *more or less enlarged;* 5, whole plant, *much reduced.*

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Tab. 7233.

RESTREPIA striata.

Native of New Grenada.

Nat. Ord. Orchideæ. Tribe Epidendreæ.

Genus Restrepia, *Humb. & Bonpl.*; (*Benth. & Hook. f. Gen. Plant.*, vol. iii. p. 491.)

Restrepia *striata*; cæspitosa, caulibus vaginis cymbiformibus pallidis striatis tectis, folio sessile late ovato subacuto v. apiculato v. 2-denticulato crasse coriaceo pallide viridi marginibus subrecurvis pallidioribus, floribus 1–4 gracile pedicellatis, bractea parva ovario æquilonga, sepalo dorsali pollicari lanceolato in filum apice clavellatum angustato albo rubro fasciato, lateralibus in laminam lineari-oblongam apice bidentatam auream creberrime sanguineo striatam cohærentibus, petalis sepalo dorsali consimilibus sed triente brevioribus, labello lineari apice 2-lobo basi auriculis incurvis apicibus subulatis falcatis instructo grosse papilloso rubro-brunneo striato, columna gracili basi bigibbosa.

R. striata, *Rolfe in Gard. Chron.* 1891, vol. i. p. 137; *Hogg in Journ. Hortic.* 1892, p. 275, fig. 45.

Mr. Rolfe remarks of this little species, that, unlike the majority of the genus, the lateral sepals instead of being spotted are striped with seven sharply defined maroon lines on a yellow ground. The former is the case with the three species previously figured in this work, namely, the type of the genus *R. antennifera*, Humb. and Bonpl. (Plate 6288, long the only known species, and considered one of the most singular of plants), *R. elegans*, Karst. (Plate 5966), and *R. Lansbergii* (Plate 5257), which should bear the name of *R. xanthopthalma*, Reichb. f. (in Hamb. Gartenz. xxi. (1865) 300), a native of Guatemala, the true *R. Lansbergii* (Reichb. f. and Wagen. in Bonpland. ii. 23) being a native of Caraccas in Venezuela.

R. striata was first known from the drawing of a flower in Kew Herbarium bearing the ticket, Schlim No. 68, and no doubt made from a new Grenadan specimen, from the Cauca range in which country Messrs. H. Low, of Clapton, sent specimens to Kew in 1892; but not till after the plant from which the accompanying drawing was made,

which was sent in February, 1889, by Mr. Moore from the Glasnevin Gardens (still, as heretofore, in his father's time), so justly celebrated for its Orchid collection.—*J. D. H.*

Fig. 1, Pedicel and flower; 2, column and lip; 3, lip; 4, column; 5, anther; 6, pollinia:—*all enlarged.*



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Tab. 7234.

LILIUM Grayi.

Native of the Mountains of Virginia and Carolina.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Lilium, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 816.)

Lilium (Martagon) *Grayi;* rhizomate late repente bulbos parvos annuos globosos squamis parvis crassis ferente, caule gracili erecto, foliis plerisque verticillatis sessilibus oblongo-lanceolatis acutis viridibus glabris, floribus 1–3 longe pedunculatis horizontalibus vel subcernuis, perianthio infundibulari rubro vel luteo tincto, segmentis oblongo-spathulatis cuspidatis intus maculis rubro-brunneis decoratis flore expanso leviter recurvatis, staminibus perianthio distincte brevioribus, stylo clavato apice stigmatoso leviter trilobato ovario æquilongo.

L. Grayi, *S. Wats. in Proc. Amer. Acad.* vol. xiv. pp. 256 and 302; *Garden & Forest,* vol. i. (1888) pp. 19, 56, and 256, fig. 4; *Man. Bot. North Unit. States,* edit. vi. p. 529.

The present plant is nearly allied to *Lilium canadense* (Bot. Mag., tabs. 800 and 858), but was considered to be a distinct species by the late Dr. Sereno Watson and other American botanists who have watched it carefully under cultivation. It was first gathered by Dr. Asa Gray, in 1840, near the summit of Roan Mountain, one of the Alleghanies of North Carolina, and was refound at the same place in June, 1879, by Dr. Gray and Professor Sergeant. It has been found by Mr. A. H. Curtiss on the Peaks of Otter, in Virginia, and by Mr. A. H. Kelsey on the banks of the Linville river, at the foot of Grandfather Mountain, in North Carolina. As compared with *L. canadense*, the flowers are smaller, less pendulous, and more open at the base, and the segments recurve very little, and are narrowed more suddenly at the apex. In the plant from which our drawing was made, which flowered at Kew for the first time in an open border in the summer of 1891, the flowers were entirely red; but they are said to be often tinged with yellow, especially on the inside towards the base. The plant, as grown in the Harvard botanic garden, has proved to be perfectly hardy,

and as amenable to cultivation as *L. candidum* and *superbum*.

DESCR. *Bulbs* small, globose, annual, arising from a wide-creeping perennial rootstock; scales small, thick, ovate. *Stem* slender, erect, glabrous, two or three feet long. *Leaves* typically, in about four whorls each of four to eight leaves, which are sessile, oblong-lanceolate, bright green, glabrous, two or three inches long and spread horizontally. *Flowers*, one, two or three, long-stalked, horizontal or rather drooping, red or tinged with yellow towards the base, especially inside. *Perianth*, openly funnel-shaped, two or three inches long; segments oblong-spathulate, spotted more or less copiously with claret-red inside, narrowed suddenly at the apex to a small cusp, spreading very little when fully expanded. *Stamens* half an inch shorter than the perianth; filaments flattened; anthers oblong. *Ovary* oblong; green, half an inch long; style as long as the ovary, thickened gradually upwards; stigmatose apex faintly three-lobed.—*J. G. Baker*.

Fig. 1, Back view of anther; 2, front view of anther; 3, pistil:—*all more or less enlarged*.



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Tab. 7235.

PILOCARPUS pennatifolius.

Native of Brazil.

Nat. Ord. Rutaceæ.—Tribe Zanthoxyleæ.

Genus Pilocarpus, *Vahl.*; (*Benth. & Hook. f. Gen. Pl.* vol. i. p. 299.)

Pilocarpus *pennatifolius;* arbuscula, ramulis paniculisque glabris v. rufo-puberulis, foliis alternis impari-pinnatis 1–1½ pedalibus, foliolis 2–3-jugis 3–9-pollicaribus oblongis apice rotundatis v. emarginatis basi in petiolulum brevem angustatis coriaceis glabris v. subtus puberulis pellucido-punctatis læte viridibus, floribus in racemum spiciformem pedalem longe pedunculatum multiflorum rachi valida dispositis, pedicellis horizontalibus validis viridibus minute 2-bracteolatis, bracteolis dentiformibus alternis a basi longe distantibus, calyce minuto 5-dentato, corolla rotata ⅓ poll. diam. rufo-brunnea, petalis ovatis acutis apicibus valvatis filamentis brevibus, antheris aureis, ovario 5-carpellari, stylis 5 brevibus cohærentibus carpellis maturis 3–5 subcompressis dorso rotundato carinatis, seminibus solitariis reniformibus altis nitidis.

P. pennatifolius, *Lemaire Jard. Fleur.* vol. iii. t. 263; *Engler in Mart. Fl. Bras.* vol. xii. part ii. p. 137; *Walp. Ann.* vol. iv. p. 411; *Bentley & Trimen, Med. Pl.* vol. i. t. 48: *Van Hall in Siebold Flore des Jardins,* vol. iii. 1860, p. 113, *cum Ic. pict.*

P. trijugatus, *Lem.* (*olim.*) *ex Walp. l. c.*

? P. Selloanus, *Engler, in Mart. l. c.* p. 136, t. xxx.

Pilocarpus pennatifolius is the source of one and that now regarded as the typical *Jaborandi*, a drug used, as are many others bearing the same vernacular name, in Brazil as a sialogogue and diaphoretic, but not introduced into the pharmacopœas of Britain, India, or the United States. According to the excellent account of the plant given by Bentley and Trimen, its determination as the source of the ordinary Jaborandi of commerce was made early in 1875 by Professor Baillon of Paris, who, from an examination of the leaves alone, was able to refer it to the genus *Pilocarpus*, and with less certainty to *P. pennatifolius.* In the same year Mr. Holmes, F.L.S., of the Pharmaceutical Society, from an examination of the fruit, confirmed its generic position, but in the absence of good flowering specimens was unable with certainty to refer it to *pennatifolius.*

May 1st, 1892.

Messrs. Bentley and Trimen go on to say that in Engler's revision of the genus for Martius' Flora Brasiliensis, a plant from Southern Brazil described as *P. Selloanus*, agrees still more closely with Jaborandi, but its fruit also is unknown. It differs in the longer, thinner, and less horizontal pedicels, and is collected near Assomption (in Paraguay) for export to Europe. Mr. Baillon concludes that both plants, whether species or varieties, yield the drug; and Dr. Trimen places *P. Selloanus* as a doubtful synonym of *pennatifolius*.

Other plants called *Jaborandi*, and having the same medicinal properties, are yielded in Brazil by, amongst others, six species of *Piperaceæ*, an *Aubletia*, Rich. (*Moniera*, Linn.), and a *Xanthoxylon*.

As a drug the *P. pennatifolius* was introduced into European practice by Dr. Coutinho, of Pernambuco, who gave specimens of it to Professor Gubler, of Paris, who tested it and found it to be an energetic sialogogue and diaphoretic. The parts used are the dried leaves, which leave in the mouth a somewhat aromatic very slightly bitter and warm taste. They contain an oil and alkaloid, both volatile, the latter termed pilocarpine.

P. pennatifolins was introduced into Europe by M. Libon, as an ornamental plant, found by him in the forests of the province of St. Paul in 1847, and was figured and described as such in 1852 in the Jardin Fleuriste. It was again in 1860 figured in the Flore de Jardins, still in ignorance of its being one of the Jaborandis of commerce. It is a widely spread plant in Brazil, being found both in the southern province of St. Paul, and in the northern provinces of Ceara and Piauhy, and especially in the neighbourhood of Pernambuco; and, as above stated, is also a native of Paraguay. In Kew Herbarium there is a specimen sent by M. Gibert from Assompcion in Paraguay, in 1858, who described it as a tree of considerable height.

The figure here given is from a plant that flowered in the Economic House at Kew in November, 1891, where it has long been cultivated.—*J. D. H.*

Fig. 1, Bud and pedicel; 2, vertical section of flower; 3 and 4, stamens; 5, ovary; 6. transverse section of do.; 7, ripe fruit:—*all of the natural size.*

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Tab. 7236.

DIDYMOCARPUS LACUNOSA.

Native of Penang.

Nat. Ord. Gesneraceæ.—Tribe Cyrtandreæ.

Genus Didymocarpus, *Wall;* (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 1021.)

Didymocarpus (Heteroboea) *lacunosa;* subacaulis, tomentosus, foliis confertis petiolatis oblongis v. ovato-cordatis crenulatis lacunosis, pedunculis elongatis 2-pluri-floris, bracteis lanceolatis pedicellis decurvis brevioribus, floribus secundis nutantibus, calyce 5-partito v. -fido segmentis lanceolatis, corollæ saturate violaceæ tubo pollicari postice medio gibboso-inflato, lobis brevibus late rotundatis recurvis integris, filamentis antherisque glaberrimis, ovario lineari pubescente in stylum mediocrum angustato, stigmate bifido.

A lovely little plant, with intensely violet-blue nodding flowers, introduced by Messrs. Veitch from Penang, and of which Herbarium specimens were sent to the Royal Gardens in 1888 by Mr. Charles Curtis from damp rocks near the coast, in the Island Langkawi, on the west side of the Malayan Peninsula, north of Penang. It is probable indeed that Messrs. Veitch's plants were procured by Mr. Curtis at the latter locality, though shipped from Penang.

The tribe *Heteroboea* of Clarke consists of eight (now nine) known species, all Malayan, and that to which *D. lacunosa* is perhaps most nearly allied is *D. crinita*, Jack, (Clarke in Fl. Brit. Ind., vol. iv. p. 351), figured at Plate 4554 of this work, which is a native of Penang, Singapore, and the adjacent islands of Borneo and Sumatra; it differs in being caulescent with a hirsute stem, longer leaves, and pale yellowish flowers with a much longer narrower tube. The native specimens of *D. lacunosa* have a short very stout rootstock and longer petioles and leaves than the cultivated, and the old leaves and petioles and nerves beneath are more shaggy with rusty brown hairs; the flowers are identical.

I am indebted to Messrs. Veitch for the loan of the specimen here figured, which was sent to Kew to be named in July of last year.—*J. D. H.*

Fig. 1, Calyx and ovary; 2, section of tube of corolla and stamens; 3, transverse section of ovary:—*all enlarged.*

May 1st, 1892.

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Tab. 7237.

ALTHAEA FICIFOLIA.

Native of S.E. Europe and the East.

Nat. Ord. Malvaceæ.—Tribe Malveæ.

Genus Althæa, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 200.)

Althæa (Pterocarpæ) *ficifolia;* caule erecto simplici setis simplicibus stellatisque saepius reflexis hispido in racemum laxiflorum abeunte, foliis ambitu orbicularibus profunde cordatis palmatim lobatis v. partitis viridibus supra pilosis subtus stellatim hispidulis, lobis 5–7 ovatis v. oblongis crenato-dentatis apicibus rotundatis, pedunculis calyce subæquilongis, involucri calyce fere duplo brevioris lobis triangularibus, calycis lobis triangularibus acutis, corolla ampla pallide flava, carpellis dorso canaliculatis rugosis marginatis v. auguste alatis hirsutis, facie glabris v. hirtis.

A. ficifolia, *Cav. Diss.* vol. ii. p. 92, t. 28, f. 2; *DC. Prodr.* vol. i. p. 437; *M. Bieb. Fl. Taur. Cauc.* vol. ii. p. 142; *Ledeb. Fl. Alt.* vol. iii. p. 236; *Fl. Ross.* vol. i. p. 433.

A. rugosa, *Alef. in Oestr. Bot. Wochen.* 1862, p. 254.

A. Froloviana, *Fisch. ex Ledeb. Fl. Ross.* vol. i. p. 433.

Alcea *ficifolia*, *Linn. Sp. Pl.* p. 687; *Schkuhr Handb.* t. 191; *Lamk. Illustr.* t. 191; *Boiss. Fl. Orient.* vol. i. p. 833; *Besser Enum.* p. 28.

A very handsome Hollyhock, long known in cultivation, if, as is supposed, it is the *Malva arborea* of the Herbarium Blackwellianum, vol. i. t. 54, which, though agreeing in foliage and calyx, &c., has bright rose-coloured flowers. Boissier, in the Flora Orientalis, cites Linnæus's Hortus Cliffortianus, p. 348, as the authority for *Alcea ficifolia*, on the authority of Linnæus himself in the first edition of the Species Plantarum (p. 687); but it appears to me to be impossible to say what the *Alcea foliis palmatis* of Hort. Cliff. is, for Linnæus cites as a synonym *Malva rosea foliis ficus* of Bauhin's Pinax, p. 313, and adds that it is hardly distinct from *A. rosea*, the common Hollyhock of our gardens. The only difference between *Althaea rosea* and *A. ficifolia* is, the usually narrow lobing of the leaves of the latter, and this is so variable a character that though I have seen no specimens of the rose-flowered Hollyhock with the

leaves of *ficifolia*, the latter has sometimes the leaves as broad and little lobed as those of *A. rosea*. Dr. Stapf, who knows both in the East, informs me that the Oriental Althæas have been too much multiplied, and that considering that *A. ficifolia*, like *rosea*, is very much a plant of cultivation, occurring in corn-fields, &c., it may well be a derivative form of such a plant as *A. rosea*, or vice versa.

As a weed of cultivation *A. ficifolia* extends from Persia to Siberia, South Russia, Syria, and Egypt. Dr. Stapf thinks its origin is most probably North-West Persia. It varies greatly in habit and size, from a few inches to five feet high, and in colour of flower from pale yellow to purple. The var. *glabrata* of Boissier is a dwarf form, to which the names *flavo-virens* and *tabrisiana* have been given by Boiss. and Hohenacker.

The specimen drawn is from the Herbaceous ground of the Royal Gardens, Kew, where it flowered last in July, 1891, and fruited in the following September.—*J. D. H.*

Figs. 1 and 2, Stamens; 3, ovary of the *nat. size*; 4, fruit of the *nat. size*; 5, carpel:—*enlarged.*



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Tab. 7238.

ERIA marginata.

Native of Burma.

Nat. Ord. Orchideæ. Tribe Epidendreæ.

Genus Eria, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.*, vol. iii. p. 509.)

Eria (Hymeneria) *marginata*; caulibus cæspitosis e basi tenui clavatis teretibus striatis, foliis 3–5 subterminalibus lineari-oblongis lanceolatisve acuminatis emarginatisve, pedunculis brevibus 2-floris albo-tomentosis, bracteis magnis ovato- v. oblongo-cordatis flavis patenti-recurvis, sepalis lateralibus lanceolatis falcatis acutis 5-nerviis petalisque lineari-oblongis obtusis 7-nerviis albis, mento rotundato, labelli recurvi pubescentis flavi rubro-marginati lobis lateralibus rotundatis, terminale longiore rotundato, disco tomentoso costa crassa ad basin lobi medii tumida percurso, et callis 2 inter lobos lateralis instructo.

E. marginata, *Rolfe in Gard. Chron.* 1889, vol. i. p. 200; *Hook. f. Fl. Brit. Ind.* vol. v. p. 800.

A little known plant, described originally from a solitary specimen, believed to have been introduced from Burma. As in almost every case of a species of Orchid, founded on a single individual, subsequently procured specimens are sure to present differences in character from what the original possessed. In the present case the petals are not flushed with pink; the stem is fully eight inches high, instead of three; the leaves lanceolate and not linear-oblong, acuminate and not obtuse, the lateral sepals are not oblong or triangular-lanceolate, but simply lanceolate, nor are the lateral lobes of the lip uncinate, though a little incurved. In other respects the plant here figured agrees well with Mr. Rolfe's characters.

E. marginata belongs to a small group of the section *Hymenolæna*, with a cylindric or clavate stem, few subterminal leaves, short peduncles, and large coloured bracts. It is perhaps most nearly allied to the Khasian *E. clavicaulis*, Wall., which has a small rounded midlobe of the lip, margined with purple; and to the Ceylon *E. Lindleyi*, of which the lateral lobes of the lip reach almost the same length as the terminal.

June 1st, 1892.

The specimen figured was sent by Mr. O'Brien, of Harrow-on-the-Hill, an ardent cultivator of Orchids, in November, 1891. It was delicately sweet scented.—*J. D. H.*

Fig. 1, Column and lip; 2, lip; 3, column; 4, anther; 5 and 6, pollinia:—*all enlarged.*



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Tab. 7239.

SENECIO (Kleinia) galpini.

Nat. Ord. Compositæ.—Tribe Senecionideæ.

Genus Senecio, *Linn.*; (*Benth. & Hook. f. Gen. Pl.* vol. ii. p. 446.)

Senecio (Kleinia) *Galpini*; subfrutex erectus, carnosus, glaucus, caule ramisque teretibus, foliis oblanceolatis acutis integerrimis basi angustata semiamplexicauli, capitulis magnis homogamis basi foliis linearibus lanceolatisve dissitis involucro brevioribus cinctis, involucri teretiusculi bracteis ad 10 apicibus liberis acutis erectis, floribus læte saturate aurantiacis longe exsertis hemisphærium involucro duplo latiorem efficientibus, corollæ tubo lobis linearibus obtusis dorso sub apice gibbis duplo longiore, styli ramis elongatis appendicula oblonga terminatis, acheniis striatis.

S. Galpini, *Hook. f. in Journ. of Horticulture*, 1892, p. 3.

In a horticultural point of view the suppression of the genus *Kleinia* of Haworth may be regrettable, but in a botanical it has no claims upon recognition other than that of a far from well defined section of the vast horde of plants included under *Senecio*. Bentham indeed says (Gen. Plant. ii. 450) that the Kleinias with a short broad appendage to the style arms, show a transition to *Notonia*, DC. a genus only distinguished from *Senecio* by this character and the homogamous discoid head. Under this definition *S. Galpini* is clearly a *Notonia*, where I should probably be compelled to place it had I under review a critical investigation of Senecionideæ, and been obliged to retain that genus. There is this, however, to be considered, that the Notonias are Indian, and not succulent, and the Kleinias all succulent and African. Bentham indeed says, under *Notonia*, that it is hardly separable from the section *Kleinia* of *Senecio*, and should perhaps either form a section of that genus with those Kleinias that have similar style arms, or a genus apart, but closely allied. He adds, however, as a further distinction, that the corollas of *Notonia* are yellow, but of most species of *Kleinia* white, which again places *S. Galpini* in *Notonia* together with *S. fulgens*.

June 1st, 1892.

The species of *Kleinia* hitherto figured in this work are *S.* (*Kleinia*) *Anteuphorbium* (Tab. 6099) supposed at the date of publication to be S. African, but now known to be a native of Cape Juby in N.-W. Africa, it has pale yellow flowers; *S.* (*Kleinia*) *pteroneura* (Tab. 5945) from Morocco, with many white flowers, and *S.* (*Kleinia*) *fulgens* (Tab. 5590) of Natal, the most beautiful of all known species, from the vivid red of its flower heads. It is to the latter that *S. Galpini* is most nearly allied, differing in the entire narrower leaves, involucrate, much larger heads and colour of the flowers.

S. (*Kleinia*) *Galpini* was raised at the Royal Gardens from seeds sent by E. E. Galpin, Esq., of Barbertown in the Transvaal Republic, in May, 1890, and which were collected on a cliff at the summit of Saddleback Mountain, altitude five thousand feet. The plant raised flowered in the Succulent House in October, 1891, and the stems died with the flowers.—*J. D. H.*

Fig. 1, Flower; 2, hair of pappus; 3, stamens:—*all enlarged.*

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Tab. 7240.

PORANA paniculata.

Native of the East Indies.

Nat. Ord. Convolvulaceæ.—Tribe Convolvuleæ.

Genus Porana, *Burm.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 876.)

Porana *paniculata*; ramulis foliis subtus inflorescentiaque pubescenti-tomentosis, foliis ovato-cordatis acuminatis basi 7-nerviis, cymis paniculatis multifloris subebracteatis, floribus parvis, corolla infundibalari, stylo abbreviato, stigmate 2-lobo, calycis fructiferi segmentis 3 valde auctis ceteris immutatis.

P. paniculata, *Roxb. Cor. Pl.* vol. iii. p. 31, t. 235; *Fl. Ind.* vol. i. p. 464; *Ed. Carey & Wallich*, vol. ii. p. 39; *Don Prodr. Fl. Nep.* p. 99; *Wall. Cat.* n. 1325; *Chois. Convolv.* n. 107; in *DC. Prodr.* vol. ix. p. 436; *Brand. For. Fl.* p. 342; *Kurz. in Trimen Journ. Bot.* 2873, 137; *For. Flor. Brit. Burm.* vol. ii. p. 220; *Clarke in Hook. f. Fl. Brit. Ind.* vol. iii. p. 222. Dinetus paniculatus, *Sweet. Hort. Brit. Ed.* 2, p. 373.

This species of *Porana*, of which there are eight in India, are amongst the most beautiful hedge-plants of that country. Two of them are specially abundant, the present, which may be met with anywhere from the base of the Himalaya throughout its length, to Ceylon and Burma, reappearing in Java; and *P. racemosa*, the "Snow Creeper" of Anglo-Indians, which is more confined to the Himalayan slopes, where its masses of dazziing white flowers have been well likened by Mr. Clarke to snow patches in the jungle. The latter is the only species which had hitherto been figured in Europe from cultivated plants, being the *Dinetus racemosus* of Sweet. Brit. Fl. Gard. t. 127. Another very beautiful species well worth cultivation is *P. grandiflora*, Wall., which ascends to eight thousand feet in the Sikkim Himalaya, and has mauve flowers an inch long.

P. paniculata is a very tropical species, never ascending above three thousand feet in the Himalayan hot valleys, where it climbs trees to a height of upwards of forty feet, sending down showers of pendulous flowering branches from above, and it is equally abundant in low jungles and

on the walls of the ruinous towns of Bengal. It is one of the smallest flowered species, and differs from its congeners in the short style and solid stigma, which latter though usually stated to be entire or nearly so, is strongly 2-lobed, as described by Roxburgh.

The plant from which the specimen here figured was taken, was raised in the Cambridge University Botanical Gardens by Mr. Lynch, A.L.S., from seeds given by Dr. Bonavia, then of Etahwah in the North-West Provinces of India, in 1885. The plant flowered in October, 1892, in a stove.—*J. D. H.*

Fig. 1, Flower; 2, calyx laid open, showing the ovary; 3, tube of corolla laid open and stamens; 4, stamen; 5, ovary and disk; 6, vertical section of ovary:—*all enlarged.*



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Tab. 7241.

ROSA POMIFERA.

Native of Europe.

Nat. Ord. Rosaceæ. Tribe Roseæ.

Genus Rosa, *Linn.* (*Benth. & Hook. f. Gen. Pl.* vol. i. p. 625.)

Rosa (Villosæ) *pomifera;* frutex erectus, ramis arcuatis, aculeis sparsis rectis æqualibus gracilibus, foliolis subduplo longioribus quam latis copiose duplicato-serratis tenuiter griseo-pubescentibus infra inconspicue glandulosis, floribus solitariis paucisve, pedunculis brevibus dense aciculatis, sepalis adscendentibus dorso dense glandulosis persistentibus majoribus sæpius copiose pinnatis, fructibus globosis v. pyriformibus præcorcibus, disco nullo.

R. pomifera, *Hermm. Diss. Ros.* p. 171; *Gmel. Fl. Bad. Als.* vol. ii. p. 410; *Lange in Fl. Dan.* vol. xvii. p. 8, t. 2907; *Koch Syn. Fl. Germ. Ed.* 2, p. 253; *Dumort. Ros.* p. 48; *Desegl. Monogr. Ros.* p. 129; *Fries Novit. Fl. Suec.* vol. ii. p. 150; *Mant.* vol. iii. p. 39; *Boiss. Fl. Orient.* vol. ii. p. 681; *Baker in Journ. Linn. Soc.* vol. xi. p. 210; *Gard. Chron.* 1886, vol. i. p. 237, fig. 45.

R. villosa, *Linn. Sp. Pl.* p. 491, *pro maxim. part. Ed.* ii. p. 704; *Swartz in Palmstr. Svensk Bot.* vol. v. t. 313.

R. villosa, *Var.* pomifera, *Desv. Journ. Bot.* vol. ii. p. 117; *Redouté Ros.* vol. i. p. 1, t. 67, vol. ii. p. 40; *Hartm. Handb. Skand. Fl.* p. 274; *Lindl. Ros. Monogr.* p. 74; *Smith Engl. Bot.* t. 583, *descript. non Ic.* (*quod* R. Sabini.)

R. villosa *var. a* pomifera, *Linn. Fl. Suec. Ed.* ii; *Huds. Fl. Angl. Ed.* 2, p. 219; *DC. Prodr.* vol. ii. p. 628.

R. sylvestris pomifera, *Dalech. Hist. Plant.* p. 127; *Lobel. Stirp. Ic.* vol. ii. p. 211; *Parkins. Theatr. Bot.* p. 1021; *Ray Cat. Pl. Angl. Ed.* 1, p. 266.

R. sylvestris pomifera major, *Bauh. Pinax*, p. 484.

R. ciliatopetala, *Bess. En. Pl. Volhhyn*, p. 66; *Reichb. Fl. Germ. Excurs.* vol. ii. p. 616 (*non Koch*).

R. resinosa, *Sternb.* in *Reich. Fl. Germ. Excurs.* vol. ii. p. 616 (non Desegl).

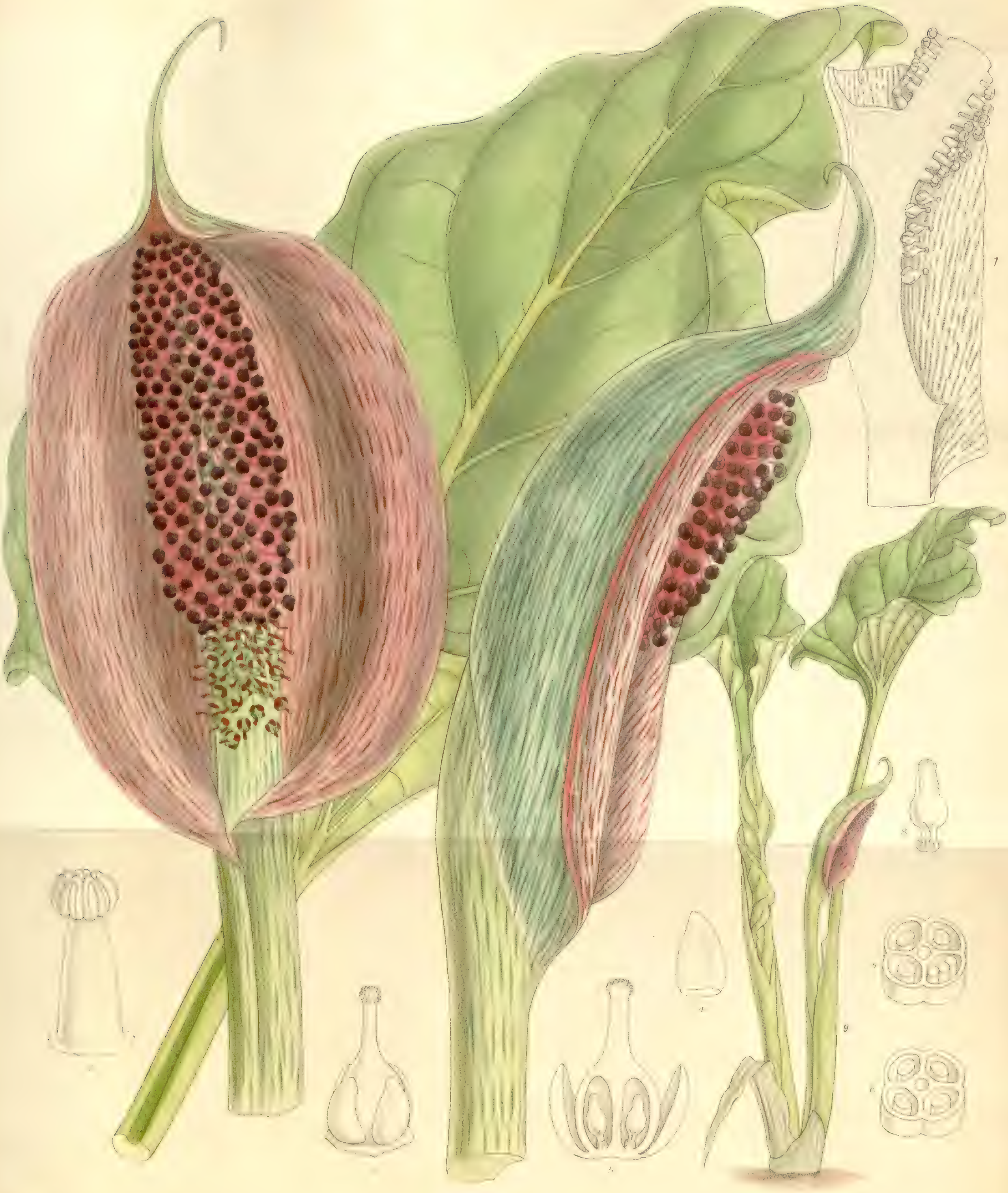
Great Apple Rose, *Parkins. Paradis.* p. 418.

Opinions are divided as to whether this fine Rose should be regarded as a variety of *R. villosa*, or the type to which *villosa* is referable, either as a synonym or as a variety with smaller fruit. I have followed the best authorities, amongst whom must be classed Koch, Boissier, Fries (in the Novitiæ) and Baker, in taking Hermann's name, as the oldest, and of which Fries says that it is also the most significant. On the other hand it has been doubted

whether the large fruited state, to which alone the name "Great Apple Rose" applies, occurs anywhere truly wild, it having been cultivated for so long a period for the size and fleshiness of its hips, in which respect it surpasses all other Roses. It has even been supposed to be indigenous in the north of England, but upon very questionable authority; and of the Scandinavian habitats none, perhaps, are above suspicion, though Fries (Mantiss iii. 39) considers it to be undoubtedly spontaneous in the Alpine Valley of Romsdalen, Norway. Ray, who clearly refers to it in describing its fruit as of the size and form of a small pear beset with spines, gives the northern parts of York and Westmoreland as localities, but as Mr. Baker observes, he doubtless did not distinguish *R. mollissima* and *tomentosa* as distinct from it. In a broad sense, as *R. villosa*, it inhabits the whole of Europe.

As cultivated at Kew the fruits are not so large or prickly as they are in the beautiful specimen figured, which was sent by Mr. Burbidge, M.A. (Curator of the Botanical Gardens, Trinity College, Dublin), from Mr. Walpole's garden, Mount Usher, co. Wicklow, with the information that it was found in an old garden site in the Devil's Glen, co. Wicklow, some years ago, and that it there forms very handsome glaucous leaved bushes with a sweet-briar like scent.—*J. D. H.*

Fig. 1, Fragment of margin of leaf; 2, ditto of petal; 3, ovary; 4, achene: —*all enlarged.*



M. S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Imp.

Tab. 7242.

SYNANDROSPADIX VERMITOXICUS.

Native of Tucuman.

Nat. Ord. Aroideæ.—Tribe Dieffenbachieæ.

Synandrospadix *vermitoxicus*; foliis floribus coetaneis hastato-cordatis acutis undulatis nervis infimis approximatis v. basi confluentibus, petiolo canaliculato pedunculo robustiore tereti longiore, spatha late cymbiformi basi apiceque caudato exceptis late aperto marginibus recurvis extus sordide viridi intus pallide purpurascente lineis brevibus saturatioribus striolata, spadice crasso spatha paullo breviore basi nuda, inflorescentia fœm. brevi spathæ late adnata, inflor. masc. quam fœm. pluries longiore et crassiore cylindracea obtusa luride purpurea; *fl. masc.* staminibus 3–5 in capitulum longe crasse stipitatum connatis rimis extrorsum dehiscentibus; *fl. fœm.* paucis sparsis superioribus interdum hermaphroditis, staminodiis 4 ovatis obtusis carnosis interdum in stamina totidem filamentis dilatatis evolutis, ovario 3–5-loculari in stylum gracilem stigmate pulvinari attenuato, loculis 1-rarius 2–3-ovulatis, ovulis erectis orthotropis, baccis 3–5-sulcatis et -locularibus, loculis 1-spermis, semine majusculo, testa crassiuscula, albumine copioso, embryone recto.

S. vermitoxicus, *Engler in Bot Jahrb.* vol. iv. p. 62: *Ic. Arac. ined.* No. 25.

Asterostigma vermitoxicum, *Griseb. Pl. Lorrentz*, p. 199; *Symb. Fl. Argent.* 282; *Engler in A.DC. Monog. Phanerog.* vol. ii. p. 517.

This noble aroid affords, according to Engler, an almost unique instance of erroneous description; if indeed it be, as he asserts, and I have no valid grounds for rejecting his opinion, really the *Asterostigma vermitoxicum* of Grisebach. The latter plant is described by its author as having a deeply bipinnatifid leaf, a spathe twice as long as the spadix, with male flowers below and female at the top, and a conical style with radiating stigmas decurrent to its base. Of these characters that of the bipinnatifid leaf is accounted for by Engler, after an examination of Grisebach's specimens, by the leaf having been mutilated by insects, and the reversal of the position of the male and female flowers is, as it appears to me, explained by his having mistaken the male flowers for the female, when the anthers might represent the decurrent stigmas. Engler's description of the plant in his Monograph of Aroids is excellent; it is illustrated by a lithographed drawing from a dried

specimen, issued as one of an invaluable series of Aroid figures distributed by that eminent botanist to all the principal Herbaria and Botanical Libraries.

S. vermitoricus is a native of the Eastern Andes, in the province of Tucuman, where it inhabits hedges and shrubberies. It was first found by Lorrentz on road-sides near Lules, who gives it the name of "Sacho-col," and who describes the tubers as attaining four pounds in weight. Two tubers were received at Kew early in 1891, from Mr. J. S. Floyer, of Sherborne, St. John, Basingstoke, with the information that they were collected by his daughter, Mrs. Glynne Williams, in Tucuman, and that it is there called "Cana brabo," ferocious cane, because the plant blisters the hands. Of these two tubers that here figured flowered in October of the same year, and the other in March of this year.—*J. D. H.*

Fig. 1, Portion of spadix and spathe, showing the insertion of the former; 2, male fl.; 3, fem. fl.; 4, staminode; 5, vertical section of fem. fl.; 6 and 7, transverse section of ovaries; 8, ovule; all but fig. 1 *enlarged*.—The leaf figured is half the natural size.



M S del. J N Fitch, lith.

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Tab. 7243.

DISA incarnata.

Native of Madagascar.

Nat. Ord. Orchideæ.—Tribe Ophrydeæ.

(Genus Disa, *Berg.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 630.)

Disa (Eudisa) *incarnata;* caulibus foliosis, foliis lineari-elongatis subtus 5-costatis, scapo vaginato, spica subdensiflora, bracteis oblongo-lanceolatis spathaceis ovaria æquantibus, floribus aurantiacis, sepalo dorsali erecto lateralibus late oblongis obtusis minore medio dorso calcare laminæ æquilongo tenui instructo, petalis dimidiato-ovatis infra apicem latere interiore appendice erecto lineari concavo instructis, labello angusto lineari deflexo sepalis aquilongo stigmate 2-lobo, polliniarum glandulis dissitis.

D. incarnata, *Lindl. Gen. & Sp. Orchid.* 348; *Rolfe in Gard. Chron.* 1892, i. 619, Fig. 88.

Habenaria incarnata, *Lyall mss., ex Lindl. l. c.* 328.

In his admirable work, "The Orchids of the Cape Peninsula" (off-print from Trans. S. Afr. Phil. Soc., 1888), Mr. Bolus well remarks of the genus *Disa* that in the variety of its perianth it is only excelled perhaps by that of *Habenaria* and *Catasetum*, and is scarcely equalled by that of any other genus in the vegetable world. To this I would add that after a careful study of a large proportion of the species of *Habenaria*, including upwards of one hundred Indian, I find their flowers to be morphologically uniform as compared with those of *Disa*; nor does this remark apply to the perianth only, it extends to the column and its appendages, and even to the pollinia; for whereas in *Disa*, the glands of the latter may be either distinct and in separate pouches of the rostellum or connate and contained in one pouch, this character actually alone separates *Habenaria* from *Orchis*. I quite believe that had *Disa* been a European genus, it would have given rise to at least as many genera as *Orchis* and *Habenaria* have, that is about thirty-five, instead of the five included in it by Bolus, and upon much more marked structural characters. From such a dismemberment *Disa* has been saved by its remote

geographical position, far from the haunts of systematic botanists, and by the sagacity of those orchidologists (Lindley and Bolus) who have devoted themselves to its study.

In the species here represented there is a remarkable deviation in the structure of the petals from any other that I find described, and that is in the erect linear concave appendages or horns, which, arising from below their tips, at the back of the anther, cross one another over the top of the latter. These did not escape Lindley's observation, who introduces them into the specific character.

D. incarnata is a native of Madagascar, where it was found some seventy years ago by Mr. Lyall, a correspondent of Sir W. J. Hooker, and more recently in 1881 by Hildebrandt, in the Ankarsatra mountains, in the centre of the Island, and at Arevommamo by G. F. Scott Elliott in 1890.

It was introduced into cultivation by Messrs. W. L. Lewis and Co., of Southgate, who exhibited it at the meeting of the Royal Horticultural Society in April last, and to whom the Royal Gardens, Kew, are indebted for the specimen here figured. With regard to the colour of the flower, Lindley is the authority for the name *incarnata*, relying on the MSS. name *Habenaria incarnata* of Mr. Lyall, which was, however, attached to that collector's specimens of *Bonatea incarnata*, and not to those of the *Disa*. Hildebrandt describes the flower as cinnabar coloured. They probably vary much.—*J. D. H.*

Fig. 1, Dorsal sepal; 2, flower with the sepals removed: 3, petals; 4, anther and stigma; 5, pollinium :—*all enlarged.*



M.S del. J.N.Fitch, lith.

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Tab. 7244.

GYNURA sarmentosa.

Native of the Malayan Peninsula and Islands.

Nat. Ord. Compositæ.—Tribe Senecionideæ.

Genus Gynura, *Cass.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 445.)

Gynura *sarmentosa*; fere glaberrima, caule tenui ramoso estriato laxe volubili scandente unacum paniculæ ramis involucroque purpureis, foliis petiolatis v. supremis sessilibus ovatis elliptico-ovatis lanceolatisve integerrimis remote denticulatis v. sinuato-dentatis, capitulis laxe paniculatis ramis pedicellisque gracillimis, involucro anguste cylindraceo glabro bracteis externis ad 8 æqualibus circumdato, bracteolis paucis linearibus, antheris basi rotundatis, styli ramis elongatis recurvis apicibus subulatis hispidis, acheniis glaberrimis multi-costatis.

G. sarmentosa *DC. Prodr.* vol. vi. p. 298; *Hook. f. Fl. Brit. Ind.* vol. iii. p. 335.

G. Finlaysoniana, *DC. l. c.* 299; *Deless. Ic. Select.* vol. iv. t. 55.

Cacalia cylindriflora, reclinata et Finlaysoniana, *Wall. Cat.* n. 3150, 3151, 3162.

Sonchus volubilis, *Rumph Herb. Amb.* vol. v. t. 103, f. 2.

? C. reclinata, *Roxb. Fl. Ind.* iii. 412.

A very elegant climber, with richly coloured stem branches and involucres, but, from its lax habit of growth, not likely to become a horticultural favourite, except in tropical gardens where space is at its disposal. It is a common plant in the Malayan Peninsula and Islands, extending to the Moluccas and Philippines, and is quite the most graceful member of the rather coarse genus to which it belongs, and of which *G. bicolor* figured at Tab. 5123 is a better representative. Altogether about twenty species of the genus are known, all tropical Asiatic and African, with one Australian.

G. sarmentosa was received at Kew from the Botanical Gardens of Singapore in 1891, under the name of *G. aurantiaca*, DC. (*Cacalia aurantiaca*, Blume), a Javan species

with a scabrid stem and deeply irregularly toothed leaves bearing bulbous based bristles, of which the upper have dilated amplexicaul bases. It flowered in a stove in the Royal Gardens, Kew, in April of the present year, not having as yet assumed its climbing habit.—*J. D. H.*

Fig. 1, Flower; 2, hair of pappus; 3, stamens:—*all enlarged.*



M.S del, J.N.Fitch.lith.

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Tab. 7245.

MASDEVALLIA LEONTOGLOSSA.

Native of New Grenada.

Nat. Ord. Orchideæ. Tribe Epidendreæ.

Genus Masdevallia; (*Benth. & Hook. f. Gen. Plant.*, vol. iii. p. 492.)

Masdevallia *leontoglossa*; cæspitosa, foliis breviter petiolatis crasse coriaceis lanceolatis apicibus acutis recurvis basi angustatis dorso costatis fusco-rubris marginibus recurvis, pedunculis radicalibus 1-floris brevibus crassis sigmoideo-recurvis basi breviter vaginatis, floribus magnis decurvis, bracteis spathaceis ovario brevioribus, sepalis lanceolatis longe acuminatis coriaceis basi in saccum costatum postice gibbum (lateralibus altius) connatis extus pedunculoque viridibus rubro-purpureo punctatis, intus rufo-purpureis plagis saturatioribus maculatis, dorsali recurvo, petalis pallidis oblongo-lanceolatis acutis margine antico gibbis, labello oblongo obtuso supra saturate purpureo apicem versus scabrido.

M. leontoglossa, *Reichb. f. in Bonplandia*, vol. iii. (1855), p. 69; *in Gard. Chron.* 1881, i. 234.

The genus *Masdevallia* is now swollen to indeterminable dimensions by the multiplication of supposed specific forms, many of them almost undistinguishable, round several well-marked types. These await a master hand in Orchidology to reduce them within definable specific limits. Of such types one of the oldest is that represented by *M. coriacea*, published in 1845 by Lindley in the "Annals and Magazine of Natural History" (vol. xii. p. 257), from specimens brought by Hartweg from Bogota, and which has been figured from native specimens by Karsten in the "Flora of Colombia," and by Mr. Rolfe in "Lindenia" (vol. vii. t. 295). According to Karsten's figure and that in Lindenia, *M. coriacea* differs conspicuously from *leontoglossa* in the tall erect strict scapes, and this is confirmed by native specimens; but the plate in "Lindenia" shows much shorter and stouter scapes than that in the Flora of Colombia. Other characters of *M. leontoglossa* are the longer tails to the sepals, especially that of the dorsal, the colour of the flowers, and the tendency to a dark purple epidermal covering of the leaves

beneath. On the other hand the petals of *leontoglossa* appear to be identical with those of *coriacea*, as is the lip, and especially as regards its scabrid distal end, which suggests the name of Lion's tongue.

M. odontoglossa is a native of the mountains of New Grenada (alias the United States of Colombia), which separate that kingdom from Venezuela.

The plant figured was presented to the Royal Gardens by F. Wigan, Esq., of Clare Lodge, East Sheen, the possessor of the best collection of Phalænopsis near London.—*J. D. H.*

Fig. 1, Petals, lip, and column; 2, petal; 3, lip; 4, column; 5 anther; 6, pollinia:—*all enlarged.*



M.S. del, J.N. Fitch, lith.

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Tab. 7246.

PRIMULA Forbesii.

Native of China.

Nat. Ord. Primulaceæ. Tribe Primuleæ.

Genus Primula, *Linn.*; (*Benth. & Hook. f. Gen. Pl.* vol. ii. p. 631.)

Primula *Forbesii*; annua, gracilis, pilosa, foliis longe petiolatis ovato-cordatis obtusis margine irregulariter lobulatis crenato-dentatisque, inter nervos utrinque costæ 3–4 convexis, scapo gracili puberulo superne et inflorescentia farinaceis, floribus longe pedicellatis roseis in verticillos 2 remotos paucifloros dispositis, bracteis parvis verticillatis pedicellis multoties brevioribus, calycis infundibularis farinacei lobis ovatis subacutis, corollæ hypocrateriformis tubo angusto calyce paullo longiore lobis patentibus obcordatis, ore obtuse 5-dentato dentibus inflexis, antheris sessilibus brevibus, ovario globoso, stylo gracili, stigmate capitellato.

P. Forbesii, *Franch. in Bull. Soc. Bot. France*, vol. xxxiii. (1886), p. 64; *Pax Monogr. Prim. in Engler Bot. Jahrb.* vol. x. p. 171; *Forbes & Hemsl. in Journ. Linn. Soc.* vol. xxvi. p. 38; *Collett & Hemsley*, l.c. vol. xxviii. p. 81.

Primula Forbesii is one of the only two known species of the genus which are strictly annual, in so far as that they die after first flowering, though they may perhaps more accurately be designated as monocarpic, if, as is probable, they form seedling plants the first year and flower and die in the following. Upon this character M. Franchet has founded the section *Monocarpicæ* to include *P. Forbesii*, and the allied Chinese species, *P. malacoides*, adding that it forms the transition between *Primula* and *Androsace*.

P. Forbesii adds another to the long list of Primulas lately discovered in the mountain districts of the interior of China. It was first found by the French missionary Delavay, in marshy ground near Tali in Yunnan; and latterly by General Sir H. Collett, K.C.B., F.L.S., in great abundance on the hills of the Shan States in Eastern Burma, at elevations of three thousand feet, which thus brings it into the limits of the British Indian Flora.

The specimen here figured was exhibited at a meeting

of the Royal Horticultural Society of London, in December, 1891, by M. Vilmorin, of Paris, who afterwards presented it to Kew. It flowered beautifully in the Alpine House of the Royal Gardens in March and April of the present year.—*J. D. H.*

Fig. 1, Calyx ; 2, portion of corolla laid open, showing the inflexed teeth at the mouth of the tube and stamens ; 3, ovary :—*all enlarged.*



M. S. del. J. N. Fitch. lith.

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Tab. 7247.

BOMAREA FRONDEA.

Native of the Columbian Andes.

Nat. Ord. Amaryllideæ. Tribe Alstromerieæ.

Genus Bomarea, *Mirbel*; (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 736.)

Bomarea *frondea*; caule elongato sarmentoso pubescente, foliis patulis laxe dispositis lanceolatis vel oblongo-lanceolatis acuminatis dorso pubescentibus, umbellis simplicibus densis multifloris, bracteis parvis ovatis, pedicellis pubescentibus flore brevioribus, perianthii anguste infundibulari splendide luteo segmentis inæquilongis, exterioribus oblanceolato-oblongis immaculatis dorso rubro-brunneo tinctis, interioribus longioribus intus rubro-brunneo punctatis apice latis truncatis minute cuspidatis in unguem sensim attenuatis, genitalibus perianthio subæquilongis.

B. frondea, *Masters in Gard. Chron.* n.s. vol. xvi. p. 669, fig. 102; *Baker Handb. Amaryll.* p. 157.

The present is one of the finest of all the species of this large genus that have been introduced into cultivation. Eighty species are now known, which fall into two main groups as regards inflorescence, one of which has simple and the other compound umbels; and two groups as regards the structure of the perianth, in one of which the segments of the inner row scarcely exceed those of the outer row in length, and the other in which they are decidedly longer. Our present plant has simple umbels and unequal perianth-segments. Its nearest ally amongst the plants previously known in cultivation is *B. Caldasiana*, Herb. (*Alstromeria Caldasii*, Bot. Mag. t. 5442). Like that species it has the valuable habit of remaining in flower for many months at a time, the stems sending out successive clusters of flowers. It inhabits the woods of the western slopes of the Andes of Columbia at an altitude of from six thousand to ten thousand feet above sea-level. It has been collected in a wild state by Holton, Schlim, Triana and Lehmann, and was introduced into cultivation by Messrs. Shuttleworth and Carder in 1882. Our drawing was made from a plant which they presented to the Royal Gardens, which was in

flower for many months on the rafters of the Cactus-house last winter.

DESCR. *Stem* wide-climbing, moderately stout, terete, pubescent. *Leaves* laxly disposed, spreading, lanceolate or oblong-lanceolate, acuminate, moderately firm, pubescent beneath, reaching a length of half a foot, resupinate at the base. *Umbel* dense, simple, many-flowered, half a foot in diameter; bracts small, ovate; pedicels pubescent, an inch or an inch and a half long. *Perianth* narrowly funnel-shaped, bright yellow; outer segments oblanceolate-oblong, obtuse, an inch and a half long, unspotted, more or less tinged with red-brown on the back; inner segments half an inch longer, bright yellow with minute spots on the face, with a broad truncate apex, with a small cusp in the middle, narrowed gradually into a slender claw. *Stamens* nearly as long as the inner segments of the perianth; anthers, oblong, small. *Style* slender, with three spreading cusps at the stigmatose tip.—*J. G. Baker.*

Fig. 1, Front view of anther; 2, back view of anther; 3, pistil:—*all enlarged.*



M.S. del, J.N. Fitch lith.

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Tab. 7248.

CAPPARIS flexuosa.

Native of Brazil.

Nat. Ord. Capparideæ. Tribe Capparеæ.

Genus Capparis, *Linn.*; (*Benth. & Hook. f. Gen. Pl.* vol. i. p. 108.)

Capparis (Capparidastrum) *flexuosa*; fructiosa, glaberrima, inermis, foliis per intervalla aggregatis petiolatis eglandulosis oblongis v. oblongo-lanceolatis obtuse acuminatis basi rotundatis, supra nitidis nervis arcuatis impressis, subtus pallidioribus, stipulis minutis caducis, pedunculis elongatis paucibracteolatis puberulis, corymbis terminalibus multifloris, bracteis deciduis minutis, alabastris subglobosis, sepalis brevibus inæqualibus oblongis obtusis puberulis marginibus erosulis, petalis albis orbicularibus revolutis, staminibus numerosis patulis petalis multoties longioribus, toro brevi, gynophoro gracili staminibus multo breviore, bacca oblongo-cylindracea torulosa bivalvi.

C. flexuosa, *Vellos. Fl. Flum.* vol. v. t. 108; *Eichler. in Mart. Fl. Bras.* v. xiii. part i. p. 280; *Walp. Rep. Bot.* vol. i. p. 200; *Ann. Bot.* vol. iv. p. 225; *Lemaire, Jard. Fleur.* vol. iii. t. 323.

A native of the province of Rio de Janeiro, first made known through a plate in the extraordinary work of J. Velloso de Miranda, entitled "Flora Fluminensis," which consists of eleven large folio volumes, containing 1676 rude uncoloured lithographed plates of Rio plants, published in Paris in 1827, the curious history of which is given by Von Martius in the German "Flora," for 1837, Beibl. vol. ii. p. 9—13. The fate of the larger number of copies, which were stored in Rio de Janeiro, is noteworthy; they are reported to have been used as wadding for guns during the revolutionary war of 1820.

C. flexuosa is rather a curious than a beautiful plant, but has its value in the delicious fragrance of the flowers, the stamens of which expand suddenly and rapidly assume their great length, separating and forcing back the convolute petals, which at once become revolute. The small oblong sepals are unusual in the order, and opposed to the sectional character of *Capparidastrum*, in which they should be more orbicular. The species has been placed

by some authors in Sect. *Cynophalla*, but in that the sepals are still broader, and broadly imbricate in two series.

The introducer of *C. flammea* into cultivation was a M. Müser, who sent it in 1850 to M. de Jonghi, of Brussels. The specimen here figured was procured from the Royal Botanical Garden of Brussels in 1888, and flowered in a stove of the Royal Garden, Kew, in April of the present year.—*J. D. H.*

Fig. 1, Flower bud; 2, corolla, torus, gynophose and ovary; 3 and 4, anthers; 5, transverse section of ovary:—*all enlarged.*



N. Fitch. del.

Vincent Brooks Day & Son. lith.

L. Reeve & Co. London.

Tab. 7249.

PASITHEA cærulea.

Native of Chili.

Nat. Ord. Liliaceæ.—Tribe Asphodeleæ.

Genus Pasithea, *D. Don*; (*Benth. & Hook. f. Gen. Pl.* vol. iii. p. 791.)

Gen. Char. (Emend.) *Perianthii* patuli segmenta post anthesis contorta; tubus brevissimus, ovario adnatus. *Sepala* oblonga, obtusa, medio tenuiter 5-nervia. *Petala* paullo majora, nervis 3 crassis percursa. *Stamina* 6, perigyna, alterna breviora, suberecta, filamentis basi incrassatis et puberulis; antheræ oblongæ, versatiles. *Ovarium* semisuperum, globosum, 3-loculare; stylus gracilis, staminibus longior, inclinatus, stigmatibus 3 brevibus apice stigmatosis; ovula in loculis 4, superposita. *Capsula* globosa, membranacea, sub 3-loba, loculicide 3-valvis. *Semina* loculis subsolitaria, subglobosa, testa crustacea nitida atra, albumine carnoso.—Herba *perennis, scapigera, elata, glaberrima, rhizomate brevi fibris vestito.* Folia *anguste linearia, graminea, attenuato-acuminata, basi vaginata, vaginis distichis, costa valida carinata, nervis tenuissimis.* Scapus *gracilis; paniculæ erecta, laxe ramosa, ramis gracilibus, erecto-patentibus, apices versus floriferis; bracteæ subulatæ.* Flores *cærulei*, 1-*poll. diam.* ***breviter gracile pedicellati.*** Capsula *parva.*

Pasithea *cærulea*, *D. Don in Edinb. New Phil. Journ.* vol. xiii. (1832) p. 237; *Kunth Enum. Pl.* vol. iv. p. 635; *C. Gay Fl. Chil.* vol. vi. p. 133; *Baker in Journ. Linn. Soc.* vol. xiii. p. 320.

Anthericum cæruleum, *Ruiz & Pav. Fl. Peruv.* vol. iii. p. 67, t. 299.

Phalangium cæruleum, *Pers. Syn.* vol. i. p. 368.

Stypandra? cærulea, *R. Br. Prodr.* p. 279; *Hook. et Arn. Bot. Beech. Voy.* 49.

Cyanella Illus. *Molina, Sag. Chil.* Ed. 2, p. 130 (Ed. 1, 1782).

Bermudiana cærulea, Phalangii ramosi facie, *Feuillée Journ. Obs. Phys. &c.*, vol. ii. p. 715, t. 8 (1714).

I have given above a full generic description of this beautiful plant, those hitherto published being more or less deficient or inaccurate, especially as regards the stamens, the filaments of three of which are very much shorter than the others; and the ovary, which is described in the "Genera Plantarum" as small in a concave torus, is really adnate to the perianth-tube for half its length, as described by Endlicher and others.

P. cærulea was discovered and described by Feuillée, a Franciscan friar, mathematician and botanist, born at Mane, in Provence, in 1660, who was commissioned to

travel in South America for scientific purposes by Louis XIV. He published in 1714 the account of his travels and discoveries, calling himself "R. P. Feuillée, Religieux minime, Mathematicien, Botaniste de sa Majesté." His description of the plant is a short one, but the figure is good, and he gives it the native name of "Illus," adding that it inhabits the mountains of Chili in "latitude 37° from the South Pole." Feuillée first visited the West Indies, and then went down the Western Coast of South America, travelling in Peru and Chili, where he discovered *Datura arborea*. On his return to France he was liberally pensioned by the King, who built an Observatory for him in Marseilles, where, worn out by his labours, he died in 1742. He is said to have been a man of modest, simple character, as becomes an ecclesiastic and true philosopher. His original drawings, many of which are unpublished, are preserved in the Bibliothèque Nationale in Paris.

Since its discovery *P. cærulea* has been collected by many travellers, one of whom, Bridges, states that it is called by the Chilians, "Espuela de Galun," the gallant's spur, but does not account for the name. Ruiz and Pavon gave it, the vernacular name of "For de Cuentas," and state that the root smells like that of *Iris florentina*. According to Molina the "bulbs" are excellent food, boiled or roasted, and make a pleasant soup. The specimen here figured was received from Herr Max Leichtlin in 1889, and flowered in the Succulent House of the Royal Gardens, Kew, in April of the present year.—*J. D. H.*

Fig. 1, Flowers with their perianth segments removed; 2, ovary and base of calyx; 3, immature capsule with one valve removed:—*all enlarged*.



M.S.del, J.N.Fitch, lith

L Reeve & Co. London

Tab. 7250.

FURCRÆA PUBESCENS.

Native of Mexico.

Nat. Ord. Amaryllideæ.—Tribe Agaveæ.

Genus Furcræa, *Bent.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 739.)

Furcræa *pubescens*; acaulis, foliis 12–20 valde recurvatis lanceolatis coriaceis glabris viridibus leviter undulatis, spinâ terminali vix pungente, aculeis marginalibus deltodeis parvis, pedunculo stricto gracili elongato, floribus in paniculam laxam rhombodeam dispositis bulbillis copiosis intermixtis, pedicellis brevissimis, bracteis deltoideis parvis, ovario viridi pubescente, perianthii segmentis oblongis extus puberulis viridi tinctis, genitalibus segmentis brevioribus.

F. pubescens, *Baker Handb. Amaryll.* p. 201.

Fourcroya pubescens, *Todaro Sopra Nuov. sp. Fourcroya, Palermo* 1879, pp. 14, with 3 figures.

These Furcræas have excited a great deal of attention lately as fibre-yielding plants. It is quite evident that the species which is best worth cultivating for economic purposes is *F. gigantea* (Bot. Mag. tab. 2250). In the present plant the leaves are much shorter and the texture is not nearly so firm. One great difficulty in describing and ascertaining the limits of the species arises from their putting on such a different character when they are cultivated in English conservatories, and when they are grown in the open, either in their native home in America, or in gardens on the shores of the Mediterranean. Last November and December I paid a visit to the Riviera to study in their full development the species which are grown in Mr. Thomas Hanbury's garden at La Mortola, in the Jardin d'Acclimatation at Hyères, and in the other gardens in that region. A full report on this subject will be found in the number for January, 1892, of the Kew Bulletin.

Our plate of the present plant looks very different as regards luxuriance of growth from that of Todaro, and yet no doubt they both represent forms of the same species. It was first flowered in the Botanic Garden

at Palermo in the year 1877, and as it produces copious bulbillæ, is easily propagated. The Kew plant, from which the drawing was made, and from which my description is entirely drawn up, was received from St. Petersburg in 1887, and flowered for the first time in the Cactus-house at Kew in November, 1891.

Descr. Acaulescent. *Leaves* a dozen or more in a rosette, lanceolate, much recurved, coriaceous but not rigid, rather wavy, about a foot long, two inches or two inches and a half broad at the middle, bright green and smooth on both sides, scarcely pungent at the tip, margined with small deltoid prickles. *Peduncle* straight, wandlike, three or four feet long, bearing only three or four small ovate bract leaves. *Panicle* rhomboid, shorter than the peduncle; branches erecto-patent, the lower under a foot long; each node bearing usually a single drooping flower and a bulblet; pedicels very short; bracts deltoid, very small. *Ovary* cylindrical, green, densely pubescent, an inch long. *Perianth* segments oblong, above an inch long, the three outer broader than the three inner, pubescent and tinged with green on the outside. *Stamens* shorter than the segments of the perianth; filament much swollen at the middle. *Style* dilated and deeply three-lobed below the middle, overtopping the anthers.—*J. G. Baker.*

Fig. 1, A single stamen; 2, style; *both enlarged*; 3, whole plant, *much reduced*.



M. S. del, J. N. Fitch, lith.

Vincent Brooks Day & Son, Imp.

Tab. 7251.

IRIS Lortetii.

Native of Syria.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Iris, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 686.)

Iris (Oncocyclus), *Lortetii*: rhizomate brevi crasso, foliis radicalibus 4–5 ensiformibus falcatis glaucescentibus, caule brevi unifloro, spathæ valvis magnis ventricosis pallide viridibus, pedicello brevi, ovario cylindrico-trigono, perianthii tubo cylindrico ovario æquilongo, segmentis exterioribus reflexis obovatis pallide albo-lilacinis punctis minutis rubro-brunneis decoratis, ore atro-brunneo, ungue pilis glanduliferis conspersis brunneis proedito, segmentis interioribus incurvatis orbicularibus distincte unguiculatis pallide lilacinis immaculatis, styli ramis latis dorso convexis cristis magnis quadratis.

I. Lortetii, *Barbey in Boiss. Fl. Orient.* vol. v. p. 131; *Herbar. Levant.* t. 7.

This section *Oncocyclus* of the genus *Iris* has received great attention of late years, and now we are acquainted with a dozen distinct species. It belongs entirely to the hot arid regions of Western Asia and the species therefore require special care in an English garden. Professor Foster dealt fully with this question in a lecture which he delivered during the present summer, which will be published shortly *in extenso* in the Journal of the Royal Horticultural Society. The present plant occupies an intermediate position between *I. susiana* and *I. iberica*, both of which have been figured in the Botanical Magazine, the former on tab. 91 and the latter on tab. 5847. It was first found by Dr. Lortet, after whom it is named, about the year 1880, in dry thickets on the slope of the southern part of the Lebanon range, at an elevation of about two thousand feet above sea-level. Our drawing was made from a plant flowered last May by H. J. Elwes, Esq., F.L.S., of Colesborn, Andoversford, Gloucestershire. We have it at Kew and it is doing well.

Descr. *Rootstock* stout, short-creeping. *Leaves* four or five in a basal tuft, ensiform, weak, glaucous, falcate, under a foot long at the flowering time. *Stem* one-flowered

about as long as the leaves. *Spathe* very ventricose, three or four inches long; outer valves lanceolate, pale green; pedicel short. *Ovary* cylindrical-trigonous, an inch long. *Perianth* tube cylindrical, about as long as the ovary; limb three or four inches long; outer segments obovate, much reflexed, two inches broad, pale grey lilac with darker stripes, copious minute red-brown dots, a dark red-brown throat and a broad claw below it with scattered gland-tipped brown hairs; inner segments incurved, orbicular, three inches broad, narrowed suddenly to a distinct claw, plain pale lilac. *Style* branches above an inch long, convex on the back; crests large, quadrate. *Anther* pale yellow, linear, about as long as the flattened brown filament.—*J. G. Baker.*

Fig. 1, Anther; 2, apex of style-branch, with crests:—*both enlarged.*



M S del, J.N. Fitch, lith.

Vincent Brooks Day & Son Imp.

L Reeve & Cº, London.

Tab. 7252.

NICOTIANA TOMENTOSA.

Native of Peru.

Nat. Ord. Solanaceæ.—Tribe Cestrineæ.

Genus Nicotiana, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 907.)

Nicotiana (Lehmannia) *tomentosa*; elata, ramosa, glanduloso-pubescens, foliis amplis obovato-oblongis acuminatis in petiolum latum basi amplexicaulem attenuatis, floribus in paniculas amplas laxe ramosas dispositis, calycis tubo terete cylindraceo lobis subulatis obtusis, corolla basi tubulosa superne oblique gibboso-campanulata, lobis ovatis obtusis patentibus, staminibus longe exsertis, ovario glaberrimo, stigmate 2-lobo.

N. tomentosa, *Ruiz & Pav. Fl. Peruv. et Chil.* vol. ii. p. 16, t. 129, f. a.

Lehmannia tomentosa, *Spreng. Anleit. zur Kentn. Gew.* ed. ii. 1817, 458; *Don. Gen. Syst.* 467; *Dunal in DC. Prod.* vol. xiii. pt. i. p. 572.

N. colossea, *E. André in Rev. Hortic.* 1888, p. 511, and 1891, p. 75 and 290; *F. Abel in Wiener Illustr. Gartenz.* 1890, p. 72 and 472, fig. 92: *Godefroy Lebœuf in Le Jardin*, 1889, p. 274, *cum Ic.*; *Gard. Chron.* 1891, vol. i. p. 84, f. 25.

The history of the introduction of this giant Nicotiana is, as given by M. André in the Revue Horticole, as follows. "In the first rank amongst new foliage plants exhibited at the Trocadéro in 1889, must be placed *N. colossea*. Its history is sufficiently remarkable. Some years ago I sold to Madame D. de Saint-Germain-les-Corbells some fine plants of Brazilian Orchids. The gardener, M. Mason, one of the most able cultivators that I am acquainted with, took the precaution of placing in the propagation house the detritus and dust removed from them during the cleaning of specimens. From this he raised various plants, and amongst others *Nicotiana colossea*."

In an article in the Le Jardin, from the pen of M. Godefroy Lebœuf, the plant has in France attained the stature of ten feet, and its leaves of three feet three inches and a breadth of twenty. The latter are described as being of a violet red colour when young, passing eventu-

ally into a deep polished green. Unlike all other Nicotianas in cultivation this does not flower in the open air, and it is multiplied by cuttings.

I have no hesitation in referring *N. colossea* to Ruiz and Pavon's *Nicotiana tomentosa*, poorly figured in their great work, but of which there are excellent specimens in the Kew Herbarium, sent to Sir W. Hooker by Mr. Matthews, as a large shrub growing in the Quebrader of Paria Mianca in Peru; again from Yucca in Bolivia, Lat. 13° S., by Mr. Pentland; and by Lobb from New Grenada. It has also been collected by Mandon in the Bolivian Andes (No. 448), who describes it as occurring everywhere in hedges near Sorata, at an elevation of eight thousand five hundred to nine thousand five hundred feet above the sea. *N. tomentosa* has been erected into a genus (*Lehmannia*) on account of the form of the corolla, which however does not materially differ from that of *Nicotiana*, in which it must remain.

The plant here figured was obtained from M. Godefroy Lebœuf in 1889, and was planted out in the central bed of the Conservatory (No. 4) of the Royal Gardens, Kew, where it rapidly reached the roof (ten feet), and had to be topped, which no doubt accounts for its bushy habit as represented in the reduced figure in the plate. It flowered in April of the present year.

Descr. A majestic herb, attaining ten feet in height, branched diffusely from the base upwards, viscidly glandular-pubescent; branches terete, ascending, leafy. *Leaves* ten to eighteen inches long, by four to six broad in the specimen figured, obovate-oblong, acuminate, narrowed into a very broad undulately winged petiole with an amplexicaul base, pale green above, paler beneath with stout midrib and principal nerves and reticulate nervules. *Panicles* terminal, a foot long and broad; branches slender terete green ascending, lax-flowered, tubercled at the articulation of the pedicels; bracts narrow, caducous; pedicels half to two-thirds inch long. *Flowers* inclined, one and a half inches long. *Calyx* broadly terete, half inch long, smooth, green, base rounded; lobes unequal, narrow, obtuse, shorter than the tube. *Corolla* slightly incurved, pale green and pubescent externally; tubular portion rather longer than the calyx lobes; lobes ovate, obtuse, spreading,

about as long as the inflated portion yellowish flushed with red within. *Stamens* suberect, twice as long as the corolla lobes, filaments yellow, anthers linear-oblong. *Ovary* conical, glabrous, style longer than the stamens, reddish; stigma oblique, two-lobed.—*J. D. H.*

Fig. 1, Calyx and style; 2, portion of corolla and stamens; 3, ovary; 4, transverse section of the same:—*all enlarged.*

M.S. del, J.N. Fitch lith.

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Tab. 7253.

TULIPA Billietiana.

Native of Savoy.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Tulipa, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 818.)

Tulipa *Billietiana*; bulbo ovoideo tunicis exterioribus brunneis intus parce adpresse strigosis, foliis subglaucis undulatis glabris haud ciliatis, inferiori oblongo-lanceolato, pedunculo elongato glabro, perianthio campanulato magno citrino segmentis exterioribus acutis interioribus obtusis, antheris nigris, filamentis basi glabris, stigmatibus magnis.

T. Billietiana, *Jord. et Four. Icones*, p. 8, t. 18.

T. Didieri var. Billietiana, *Baker in Journ. Linn. Soc.* vol. xiv. p. 283.

The *Didieri* group of Tulips are allied to the *Gesneriana* in stature, in the size of the flower and in the glabrous leaves and peduncles, but they differ by having the three outer segments of the perianth subacute. There are four principal forms, *Didieri*, *maurina*, *planifolia* and *Billietiana*, which differ from one another principally in the colour of the flower. They flower a little earlier than the *Gesneriana* and are found wild in the neighbourhood of St. Jean de Maurienne in Upper Savoy, whence we received a supply of bulbs at Kew in 1889. These at first produced a fine yellow flower, but next year it was tinged with red. Our plate was drawn from a plant that flowered at Kew in the last week of May, 1891. We have received from Mr. H. J. Elwes a form with a black spot at the base of the perianth-segments and black instead of yellow filaments.

Descr. *Bulb* ovoid, bearing many accessory bulbs; outer tunics brown, with only a few adpressed hairs inside. *Leaves* four, subglaucous, much undulated, not hairy on the surface nor ciliated on the edge, the lower one oblong-lanceolate, six or eight inches long, the others smaller. *Peduncle* long, glabrous, erect. *Perianth* campanulate, above two inches long; segments pure bright lemon-yellow,

the three outer subacute, the three inner obtuse. *Stamens* under an inch long; filaments linear, yellow, glabrous at the base; anthers black, linear. *Ovary* as long as the anthers; stigmas very large.—*J. G. Baker.*

Fig. 1, A flower with the perianth-segments taken away :—*enlarged.*

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Tab. 7254.

STEMONA Curtisii.

Native of Penang.

Nat. Ord. Roxburghiaceæ.

Genus Stemona, Lour.; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 747.)

Stemona *Curtisii;* caule gracili volubili, foliis alternis ovatis caudato-acuminatis profunde cordatis 9-11-nerviis, pedunculis axillaribus pauci-floris, perianthii foliolis 1 poll. longis roseis, antheris flavis, appendice loculis subæquilongo obtuso intus lamellato.

S. Curtisii, *Hook. f. Fl. Brit. Ind.* vol. vi. p. 298.

A very interesting plant, as belonging to a most peculiar group of petaloid monocotyledons that has been regarded as an Order distinct from *Liliaceæ*, but the genera of which may more properly be regarded as forming two distinct sections of that great family, so much do its members differ from one another, whilst agreeing in most others with the *Liliaceæ*. Of this order, *Roxburghiaceæ*, the type is *Stemona tuberosa*, Lour., better known as the *Roxburghia gloriosoides* of Sir W. Jones (in Roxburgh's Coromandel Plants, t. 32), and well figured on Plate 1500 of this magazine as *Roxburghia Gloriosa*, Pers. It is a widely distributed species in Eastern Bengal, Assam, the Khasia Hills, and the Deccan Peninsula, extending into Siam and China. It differs conspicuously from *S. Curtisii* in its much larger always opposite leaves, greenish flowers one and a half to two inches long, and in the appendages of the anthers being yellow-green, elongate-subulate, and almost twice as long as the scarlet cells. No other species of the genus was known till the late Mr. Kurz, an Assistant in the Calcutta Botanical Garden, published his *S. Griffithiana*, a Burmese species, with an erect stem, flowering before leafing. To these has within the last few weeks been added in the recently published Part xviii. of the Flora of British India, two other species, *S. minor*, Hook. f., a native of Malabar and Ceylon, resembling a small state of *S. tuberosa*, but with alternate leaves, and

S. Curtisii, the subject of the present plate. I cannot recall any Liliaceous genus in which the stem is erect in one species and scandent in others, the leaves opposite in some and alternate in others, and with the flowers appearing with the leaves in their axils in most of the species, but in one appearing on leafless stems; nevertheless, the above named plants are undoubtedly congenerics. When describing *S. Curtisii* for the Flora of British India, I found the only three flowers available for analysis to be unisexual, but as both ovary and stamens are formed in the flower of the Kew individual, the plant is probably polygamous.

The only other genera of the group *Roxburghiaceæ* are *Croomia*, Torr. and Gr. of Florida and Japan, and my *Stichoneuron*, a plant of the Khasia Hills; both resemble *Stemona* in the consistence and nervation of the leaves, but differ wholly in their minute flowers with simple oblong or didymous anthers, without appendages, and in the more important character of the ovules being pendulous from the top of the cell of the ovary. These differences suggest that *Roxburghiaceæ* should be broken up into two tribes of one Order, or perhaps better form two tribes of *Liliaceæ*, probably to be placed near *Uvulariæ* or *Medeoleæ*, but differing from both in the introrse dehiscence of the anthers.

S. Curtisii was discovered by Mr. Curtis, Superintendent of the Penang Garden, where it grows near the Waterfall. He sent Herbarium specimens to Kew in 1888, but the plant figured was received from the Botanical Garden of Singapore in July, 1891. I am not informed as to whether it is a native of the Malayan Peninsula. It was received at Kew in July, 1890, and flowered in a stove in April of the present year.—*J. D. H.*

Fig. 1, Flower with the perianth removed; 2, stamens seen in front; 3, ovary; 4, transverse; and 5, longitudinal section of the same:—*all enlarged.*



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Tab. 7255.

VERNONIA PODOCOMA.

Native of Africa.

Nat. Ord. Compositæ. Tribe Vernonieæ.

Genus Vernonia, *Schreb.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 227.)

Vernonia (Strobocalyx) *podocoma*; fruticosa, ramulis teretibus striatis, foliis magnis petiolatis elliptico-ovatis acutis integris v. sublobatis argute dentatis supra glabrescentibus subtus pubescentibus v. incano-tomentosis, paniculis amplis polycephalis, capitulis parvis fasciculatis breviter-pedicellatis 4-5-floris, involucri cylindracei pubescentis bracteis ovato-rotundatis viridibus arcte imbricatis interioribus patentibus demum eduris, receptaculo angusto, corollæ tubo longe exserto, antheris basi breviter cordatis, connectivo apice ovato, achænio piloso, pappi scabridi setis extimis brevioribus.

V. podocoma, *Schultz Bip. in Schweinf. Beitr. Fl. Æthiop., Aufzaehl.* p. 287, n. 2660, nomen.; *Oliver Fl. Trop. Afric.* vol. iii. p. 296.

V. cylindrica, *A. Rich. Fl. Abyss. Tent.* vol. i. p. 374 (non *Schultz Bip.*, Ede *Vatke in Linnæa*, vol. xxxix. (1875) p. 476.

Although this plant forms a poor subject for a botanical plate, it is a very effective one in a warm temperate house, from its height, large foliage, and broad corymbose panicles of rose-colrd. heads of flowers. It is a native of subtropical and tropical Eastern Africa; and, like so many plants of that region, has a very wide geographical range, from Abyssinia to the Zambesi, where it was found by the late Mr. Mellor on the Manganja Hills, and where it bears the native name of Foutra, flowering in September, and from thence it extends to Natal. It appears to be very common in the Shire Highlands, and to occur on the opposite side of the Continent, in Angola, in a much more tomentose form. The plant here figured was raised from seeds sent to the Royal Gardens by Mr. Ernest E. Galpin, in March, 1890, and flowered in the Succulent House last winter, where it attained a height of ten feet. The panicle of flowers attains three feet in length and two and three-quarters in breadth. The leaf in the plate is reduced to half its natural size.

September 1st, 1892.

Descr. A tall shrub or undershrub, ten feet high as cultivated at Kew, branches and leaves beneath pubescent or tomentose, as are the branches of the panicle and involucres. *Leaves* eight to twenty inches long by a foot broad or less, variable in breadth, much smaller in Abyssinian and Angolan specimens, margin sometimes lobulate, always acutely toothed. *Heads* in corymbosely panicled clusters, two to three feet broad, subsessile. *Involucre* half-inch long, cylindrical before the upper scales spread and fall away; scales broadly ovate, obtuse, green, coriaceous. *Flowers* four to five; corolla pink, tube twice as long as the involucre; anthers and stigmas yellow. *Achenes* ten-ribbed, thinly hairy when ripe, glandular between the ribs. *Pappus* scabrid, double, pale yellow or white, outer hairs very short.—*J. D. H.*

Fig. 1, Head of flower; 2, flower; 3, pappus hair; 4, stamens:—*all enlarged*; 5, *reduced* figures of whole plant.

Vincent Brooks Day & Son Imp

Tab. 7256.

DISA Cooperi.

Native of Natal.

Nat. Ord. Orchideæ. Tribe Ophrydeæ.

Genus Disa, *Berg.*; (*Benth. & Hook. f. Gen. Pl.* vol. iii. p. 630.)

Disa (Eudisa) *Cooperi*; robusta, foliis lineari- v. elliptico-lanceolatis v. oblanceolatis subacutis infimis in petiolum augustatis, scapo vaginato, spica robusta multiflora, floribus odoris, bracteis magnis herbaceis ovario longioribus cymbiformibus apicibus elongatis subulatis sphacelatis rubro-castaneis, sepalo dor-ali infundibulari pallido in cornu ascendente gracili ovario multoties longiore attenuato, lateralibus oblongis reflexis roseis, petalis dolabriformibus retusis, labello unguiculato flavo-viridi late ovato sub apice rotundato obscure trilobo, anthera postica, polliniis pendulis glandulis dissitis, stigmate? magno tumido.

D. Cooperi, *Reichb. f. in Flora*, lxiv. (1881) 328.

Under *D. incarnata* (Tab. 7243) I have alluded to the extraordinary diversity that obtains between the same organs of the various species of this supremely polymorphic genus. Compared with *D. incarnata*, putting aside the obvious difference between them in the forms of the members of the perianth, there is a yet greater one in the anther, which is in the former species erect with the rostellum and its pouches placed immediately above the stigma, and the pollinia erect, but in this the anther is thrown back, or as it were turned over, with the rostellum and its pouches rising high above the stigma, and the pollinia are pendulous. In the one case the anther faces the lip, in the other it faces the dorsal sepal. Another singular feature in *D. Cooperi* is the great size of what I take to be the stigma, and which forms a fleshy rounded boss at the base of the very short column, overhanging the claw of the lip, and at least twice as broad as the rest of the column. A similarly resupinate anther occurs in other species, as in *D. obtusa*, Lindl., figured by M. Bolus in his "Orchids of the Cape Peninsula," p. 153, Plate 34, which is otherwise a widely dissimilar species, in every floral organ. In various other species the anther is horizontal, or more or less inclined backwards or forwards.

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Disa Cooperi is a native of the North-Eastern districts of extratropical South Africa, having been discovered many years ago in the Orange Free State by Mr. Cooper, a collector employed by the late W. W. Saunders, Esq., F.R.S., of Reigate. It has been found in the Transvaal, at Sydenburg by Dr. Atherstone, and in Natal by Mrs. Fannin. From this last country the specimen here figured was imported by Messrs. Sander and Co. of St. Albans, who exhibited it at a meeting of the Royal Horticultural Society in February last and then presented it to the Royal Gardens, Kew. It has a strong scent of cloves.—*J. D. H.*

Fig. 1, Flower with the sepals removed; 2, column, and stigma?; 3, pollinium:—*all enlarged.*



M. S. del. J. N. Fitch lith.

Vincent Brooks Day & Son Imp.

Tab. 7257.

LILIUM sulphureum.

Native of Burma.

Nat. Ord. Liliaceæ. Tribe Tulipeæ.

Genus Lilium, *Linn.*; (*Benth. & Hook. f. Gen. Pl.* vol. iii. p. 816.)

Lilium (Eulirion) *sulphureum*; bulbo globoso magno, caule erecto 6–7-pedali apice cernuo, foliis pluribus sparsis linearibus viridibus, superioribus sensim brevioribus basi bulbilliferis, floribus 1–3 corymbosis, perianthio infundibulari pallide sulphureo segmentis oblanceolato-oblongis parte tertia superiore recurvatis exterioribus extus rubro-brunneo suffusis, staminibus perianthio distincte brevioribus, antheris lineari-oblongis, polline rubro-brunneo, stylo staminibus superante stigmate magno.

L. Wallichianum var. superbum, *Hort. Low.*; *Baker in Gard. Chron.* 1891, pt. 2, p. 480.

L. ochroleucum, *The Garden*, 1891, vol. ii. p. 338, non *Wallich.*

The recent exploration of Upper Burma by General Collett and others has resulted in the discovery of four new Lilies. Of these, *L. primulinum* (tab. 7227) and *L. Lowii* (tab. 7232) have already been figured in the "Botanical Magazine." The present plant is the third species. The fourth, *L. Bakerianum*, which has erect broadly funnel-shaped flowers, has not yet been brought into cultivation, but is figured from the dried specimens gathered by General Collett in the twenty-eighth volume of the "Journal of the Linnean Society," tab. 22. For the introduction into cultivation of the other species we are indebted to Messrs. Hugh Low and Co. Of the Lilies previously known, the present plant is most nearly allied to *L. Wallichianum* (Bot. Mag. tab. 4561), which inhabits Kumaon and Nepaul. It resembles *Wallichianum* closely in its leaves and general habit, but the Himalayan plant has pure white flowers, more slender anthers with bright yellow pollen, and does not produce bulbillæ in the axils of the upper leaves. Our drawing was made from a plant presented by Messrs. Low to the Royal Gardens, Kew, which flowered in the Temperate House last October.

October 1st, 1892.

Descr. *Bulb* large, globose. *Stem* erect, cernuous at the apex, six or seven feet long, green throughout. *Leaves* numerous, scattered, spreading, linear, bright green, the lower three or four inches long, the upper growing gradually shorter, and many of them producing bulbillæ in their axils. *Flowers* usually two or three, pendent on long peduncles, fragrant, sulphur-yellow, tinged outside with claret-red. *Perianth* funnel-shaped, seven or eight inches long, the oblanceolate-oblong segments permanently connivent in the lower two-thirds, recurving in the upper third; outer segments but little over an inch broad; inner nearly two inches broad. *Stamens* an inch and a half shorter than the perianth-segments; anthers above an inch long, with red-brown pollen. *Style* much overtopping the anthers, curved at the apex; stigmas large.—*J. G. Baker.*

Fig. 1, Front view of an anther; 2, back view of an anther; 3, pistil:—*all life-size.*



M.S.del, J.N.Fitch lith.

Vincent Brooks, Day & Son Imp.

Reeve & Co. London.

Tab. 7258.

POTENTILLA Salesoviana.

Native of Kashmir and the Altai Mountains.

Nat. Ord. Rosaceæ. Tribe Potentilleæ.

Genus Potentilla, *Linn.*; (*Benth. et Hook. f. Gen. Plant.* vol. i. p. 620.)

Potentilla (Trichothalamus) *Salesoviana*; suffruticosa, sericeo-pilosa, caule robusto ramoso fusco-rubro, foliis pinnatis, foliolis 7–9 oblongis obtusis coriaceis grosse crenato-serratis subtus argenteo-sericeis, stipulis amplis membranaceis acuminatis fuscis, floribus amplis cymoso-paniculatis, calycis lobis ovatis v. ovato-lanceolatis acuminatis utrinque sericeis, bracteolis parvis linearibus v. lanceolatis, petalis albis spathulato-rotundatis calycem vix excedentibus, receptaculo globoso strigoso, acheniis villosis, stylo gracili ventrali.

P. Salesoviana, *Steph. in Mem. Soc. Nat. Mosc.* ii. (1809) 6, t. 3; *Willd. Enum. Pl. Hort. Berol.* i. p. 552 (Salesovii); *Nestler Monog. Potentill.* p. 31; *Lehm. Monogr. Potentill.* p. 35, t. 1; *Revis. Potentill.* p 13 (Salessovii); *DC. Prodr.* vol. ii. p. 583; *Ledeb. Fl. Alt.* vol. ii. p. 233; *Hook. f. Fl. Brit. Ind.* ii. 348.

P. discolor, *Cambessi. in Jacquem. Voy. Bot.* 53, t. 65.

Comarum Salesovi, *Bunge, Ind. Sem. Hort. Dorpat.* 1839; *Ledeb. Fl. Ross.* vol. i. p. 63.

Potentilla Salesoviana was discovered in the Altai mountains early in the century, and published under the above name; and it has since been found abundantly in the drier N.W. Himalaya and Western Tibet, at eleven to fourteen thousand feet elevation; and in the Thian-Schan mountains. In 1839 it was cultivated in the Botanical Garden of Dorpat, when Professor Bunge redescribed it, referring it to the genus *Comarum*, under which name it is very generally cultivated in European gardens. The reason for this transference of the plant to *Comarum* was no doubt the strongly elevated receptacle (a very variable organ in *Potentilla*) for in no other character does *P. Salesovi* resemble that genus (or section of *Potentilla* as it is now held to be) which is a marsh plant, with a woody rhizome, very small purplish brown acute petals, a downy receptacle, and glabrous achenes.

On the other hand, *P. Salesoriana* is a typical member of the section *Trichothalamus* of *Potentilla*, characterized by the

long stiff hairs of the receptacle, which conceal the achenes. Its near ally is the beautiful *P. fruticosa* of Europe and the Himalaya, with which indeed, according to a note in Nestler's monograph of the genus, the elder De Candolle was almost disposed to unite it. I fancy, however, that there must be some misunderstanding here of De Candolle's view, for *P. fruticosa* has subdigitately pinnate leaves, bracteoles exceeding the calyx-lobes, and golden petals. Curiously enough Lehman describes the petals of *P. Salesoviana* as white in his "Monograph" of the genus, but red in his subsequent "Revision" of it.

P. Salesoviana has long been in cultivation at Kew, but for the fine specimen here figured I am indebted to the Rev. Canon Ellacombe, of Bitton Vicarage, with whom it flowered in June last.—*J. D. H.*

Fig. 1, Section of flower with petals removed; 2 and 3, stamens; 4, pistils; 5, achene; 6, the same with half of the pericarp removed, showing the seed:—*all enlarged.*

M.S. del. J.N. Fitch lith.

L. Reeve & Co. London.

Tab. 7259.

CIRRHOPETALUM Makoyanum.

Native of the East Indies.?

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Cirrhopetalum, *Lindl.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 504.)

Cirrhopetalum (Umbellatæ) *Makoyanum*; rhizomate robusto repente, pseudobulbis sparsis anguste ampullæ formibus sulcatis nudis, folio oblongo-oblanceolato subacuto, scapo gracillimo erecto rufo-brunneo 2-vaginato, vaginis parvis inferiore tubulosa appressa superiore subulata patula, umbella 12–14-flora, bracteis setaceis pedicellis brevibus brevioribus, floribus $1\frac{1}{4}$ poll. longis stellatim patentibus aureis rubro-punctatis, sepalo dorsali ovato acuminato decurvo ciliato, lateralibus dorsali multoties longioribus anguste linearibus in laminam subcylindraceam elongatam acutam basi dorso gibbam cohærentibus, petalis sepalo dorsali paulo brevioribus ovatis caudato-acuminatis ciliatis, labello breviter stipitato ovato-lanceolato pallido, columna ecalcarata subbialata, alis superne dilatatis truncatis, pede brevi.

C. Makoyanum, *Reichb. f. in Gard. Chron.* 1879, i. 232.

Cirrhopetalum Makoyanum was described about twelve years ago by Dr. Reichenbach in the Gardener's Chronicle, and named by him after the eminent nurserymen and importers of exotic plants, the Messrs. Makoy, of Liege. According to its importers it was found in the province of Minas Geraes in Brazil, a localization which Dr. Reichenbach very naturally hesitates to accept, the affinity of the plant being clearly with the Asiatic species of *Cirrhopetalum*, and especially with the Bombay *B. fimbriatum* (Bot. Mag. t. 4391), which differs in having globose pseudobulbs, broader, longer and flat lateral sepals, and two strong teeth at the top of the column. It is perhaps nearer to *C. gamosepalum*, Griff., a native of Burma and the Malay Peninsula, which has a filiform rhizome, and a three-toothed column with a long foot. In the unarmed column it agrees better with another of the same group, *C. Cumingii* (t. 4996), which has red flowers, flat linear abruptly acuminate lateral sepals, and a prolonged foot to the column. These all belong to a very consider-

able section of the genus, with many flowers in a flat umbel, and ciliate dorsal sepal and petals, which is confined to the Old World; to which quarter of the globe no doubt *C. Makoyanum* is to be assigned.

The distinctive characters of *C. Makoyanum* are the stout rhizome, the pale yellow flowers dotted with red, and the revolute margins of the lateral sepals, which being coherent, together form a slender tube narrowing from the base to the apex, the very short foot of the column, and its truncate wings.

The Royal Gardens are indebted to Fredk. Wigan, Esq., of Clare Lodge, East Sheen, for the specimen here figured, which flowered in January, 1892, in the Orchid House.—*J. D. H.*

Fig. 1, Flower; 2, lip and column; 3, lip; 4, column; 5 and 6, side and front views of anther; 7, pollinia;—*all enlarged.*



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Tab. 7260.

MONODORA GRANDIFLORA.

Native of Western Tropical Africa.

Nat. Ord. Anonaceæ.—Tribe Mitrephoreæ.

Genus Monodora, *Dunal*; (*Benth. et Hook. f. Gen. Pl* v l. i. p. 26.)

Monodora *grandiflora*; arborea, foliis oblongis obovato-oblongisve acutis basi rotundatis obtusis cordatisve, pedunculis v. ramulis hornotinis supra medium 1-bracteatis, sepalis lanceolatis acuminatis undulatis, petalis exterioribus 3–4-pollicaribus lanceolatis crispato-undulatis aureis rubro maculatis, interioribus duplo minoribus unguiculatis latissime ovato-cordatis angulis basi inflexis ciliatis, ovario turbinato, stigmate lobulato, **fructu 6 poll. diam. pericarpio crasso subsulcato.**

M. grandiflora, *Benth. in Trans. Linn. Soc.* vol. xxiii. p. 474.

M. Myristica *var.* grandiflora, *Oliver Fl. Trop. Afr.* vol. i. p. 38.

Xylopia undulata, *Beauv. Fl. Oware et Benin*, vol. i. p. 27, t. 16 (*excl. fruct.*) ?

The genus *Monodora* was founded on a tree at that time known only as cultivated in the West Indies, where it is called the American or Calabash Nutmeg, and of which the fruit alone had been previously described and figured by Gaertner (Fruct. vol. ii. p. 194, t. 125, f. i.) as *Anona Myristica*. The specific and popular name being due to the fact of the seeds containing an aromatic oil resembling in flavour but less pungent than that of the Nutmeg, and used for the same purposes, in food and as medicine. This, for long the only known species, was supposed in Jamaica to have been brought from the Continent of America. It is figured at tab. 3059 of this Magazine, and fully described by Dr. Bancroft from living specimens, accompanied with observations by the editor of the Magazine, who supplies a note to the effect that Robert Brown considered it more probable that it was brought by the negroes from the West Coast of Africa.

Nothing further was known of the genus till a second species, that here figured, was described by Mr. Bentham, from specimens collected by Mr. G. Mann (late Conservator of Forests in Assam) in tropical Western Africa, and which he identified with the *Xylopia undulata*, Beauv. of Benin, together with two others, *M. tenuifolia*, Benth., and *M. bre-*

vipes, Benth., all natives of the Bight of Benin. Mr. Bentham also indicates three insufficiently known species, *M. angolensis*, Welw. (Journ. Linn. Soc. vol. iii. p. 151); a second from the Niger river; and a third from the Zambesi.

Mr. Bentham doubted whether his *M. grandiflora*, of which he had seen only Herbarium specimens, might not be the same as *M. Myristica*; and Professor Oliver has, in the Flora of Tropical Africa, placed it as a variety under the latter. A comparison of the plates 7260 and 3059 would seen to negative this, for if Dr. Bancroft's figure is to be trusted, the flowers of *M. Myristica* are not half the size of those of *grandiflora*, the proportions of the outer and inner sepals differ greatly, as does their colouring, and the position of the bract on the peduncle of the flower. On the other hand, Dr. Bancroft says that the flowers vary much in size, and the position of the bracts in the genus is far from constant. Beauvois' figure is too bad to admit of its being identified with *M. grandiflora*; and he represents as actually growing from the stem, the fruit of a totally different genus. Nor must it be overlooked that Gaertner's fruit of *M. Myristica* is not half the size of that of *M. grandiflora*, its seeds are much smaller, and the pericarp is comparatively thin.

I have only further to remark that the corolla of the genus has not hitherto been accurately described; the petals are completely confluent below; and the base of the hence gamopetalous corolla is raised in the centre of the flower forming an erect columnar tube that supports the torus; this column is nearly terete in the newly opened flower, as represented at fig. 2, but becomes at length grooved, as shown at fig. 1.

M. grandiflora has been long cultivated at Kew, having probably being sent by Mr. Mann about the year 1860. It has attained in the Palm House a height of fifteen feet, where it flowers in spring. Mr. Watson informs me that it loses its leaves in autumn, and forms new ones in spring of a glossy rose purple when young, turning to a glossy green when mature.—*J. D. H.*

Fig. 1, Base of corolla, showing the erect columnar portion stamens and ovary, backed by an inner petal; 2, column from a newly expanded flower; 3 and 4, anthers; 5, transverse section of ovary; 6, ovule:—*all but fig.* 1 *enlarged.*



M.S. del. J.N. Fitch, lith.

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Tab. 7261.

CHEIRANTHERA parviflora.

Native of Western Australia.

Nat. Ord. Pittosporeæ.

Genus Cheiranthera, *A. Cunn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 133.)

Cheiranthera *parviflora;* caule gracili volubili glabro v. puberulo, foliis subsessilibus linearibus v. oblongo-ovatis lanceolatisve acutis obtusisve marginibus recurvis, floribus solitariis terminalibus longe pedunculatis, sepalis minutis, petalis obovato-oblongis apiculatis, antheris filamentis æquilongis, ovario in stylum incurvum attenuato.

C. parviflora, *Benth. Fl. Austral.* vol. i. p. 128.

A very elegant twiner with interlaced branches, as shown in the figure here given of a plant grown at Kew, but according to the description in the Flora Australiensis, having sometimes a less twining habit with short leafy branches. The plant also varies extremely in foliage, with leaves from one half to one and a half inch long and from broadly oblong-lanceolate to linear. In habit it much resembles the well-known green-house favourite, *Sollya heterophylla* (Tab. 3523), from which the genus *Cheiranthera* differs in the stamens not forming a cone round the pistil, but being bent to one side of the flower (as in the section *Pleurandra* of *Hibbertia*) facing the incurved aspect of the ovary.

C. parviflora is a native of Western Australia, in the King George's Sound district, where it was discovered half a century ago by Mr. James Drummond, the indefatigable explorer of the Botany of the Swan River Colony, and I have seen no other native specimens than those sent by him to Sir W. Hooker nearly half a century ago. The plant here figured was raised from seeds sent by G. W. Leake, Esq., Q.C., Member of the Legislative Council of

Western Australia, a valuable contributor to the Royal Gardens, where it flowered in a cool greenhouse in July of the present year.—*J. D. H.*

Fig. 1, Calyx and ovary; 2, petal; 3, stamens and ovary; 4, stamen; 5, ovary with half of pericarp removed showing the ovules; 6, transverse section of ovary;—*all enlarged.*



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Tab. 7262.

MOOREA irrorata, *Rolfe.*

Native of the Andes of South America.

Nat. Ord. Orchideæ. Tribe Vandeæ.

Genus Moorea, *Rolfe in Gard. Chron.* 1890, vol. ii. p. 7.

Gen. char. *Sepala* subæqualia, libera, patentia. *Petala* sepalis subsimilia, sed basi angustiora. *Labellum* sepalis minus, cum basi (pedi brevissimo) crasso columnæ articulatum, sessile, profunde trilobum, lobis lateralibus majusculis auriculæformibus obtusis, intermedio subulato lateralibus paullo longiore porrecto, disco bicornuto inter cornua 3-calloso. *Columna* incurvo-erecta, robusta, basi incrassata, exalata. *Anthera* terminalis, hemispherica, incumbens; pollinia 4, subreniformia, paribus valde inæqualibus, apice stipitis anguste linearis basi viscosi affixa, glandula 0; rostellum inconspicuum; stigmate transverso.—Herba *pseudobulbosa, elata.* Pseudobulbi *ovoidei, sulcati, diphylli.* Folia *maxima,* (3½ *pedalia*), *petiolata, elliptico-lanceolata, acuminata, plicata.* Scapus *inter pseudobulbos enatus, validus, erectus, foliis multo brevior, vaginatus.* Flores *ampli, laxe racemosi, breviter pedicellati;* bracteæ *cymbiformes, acutæ, ovario breviores, coriaceæ, persistentes.* Sepala *et* petala *coriacea, ochraceo-brunnea, basi pallidiora.* Labelli *lobi laterales straminei, purpurei transverse striati, intermedio basi aureo apice purpureo; cornua disci suberecta, obtusa, aurea rubro-punctata.* Columna *et* anthera *pallide stramineæ.*

M. irrorata, *Rolfe in Gard. Chron. l. c.* and 1892, i. p. 489, fig. 73.

A very handsome Orchid, closely allied to *Houlletia*, but generically distinguished by its author, Mr. Rolfe, by the lip being without a claw and articulate with the base or foot of the column, and by its mid-lobe or epichile not being articulate with the hypochile. It is named in honour of Mr. F. W. Moore, Curator of the Glasnevin Botanical Gardens, who worthily upholds the condition of those Gardens (so celebrated for the cultivation of Orchids) to which his father raised them. Unfortunately the native country of *Moorea* is only approximately known, it was bought by Mr. Moore at a sale of Orchids, and was probably imported by Messrs. Shuttleworth, Carder & Co., from the Andes of New Grenada or Peru, those gentlemen having sent a flowering raceme, together with a leaf, to

Kew in December, 1889, a few months before others were received from Mr. Moore, though the fact was not known until later.

The plant figured was flowered by Mr. Moore in March of the present year.

Descr. *Pseudobulbs* one and a half inches long, ovoid, grooved, green. *Leaves* two, attaining three feet in length by eight inches broad, elliptic-lanceolate, acute, plicate, with five principal nerves, narrowed at the base into a petiole of variable length. *Scape* from the base of the pseudobulb, much shorter than the leaves, suberect, as stout as a swan's quill, terete, green; sheaths three to five, rather distant, one to one and a half inches long, brown. *Raceme* erect, six to ten inches long laxly many-fld.; rachis stout, terete, green; bracts one to one and a half inches, elliptic-cymbiform, acute, thinly coriaceous, persistent; pedicel and ovary one and a half inches long, stout, ascending or decurved, green. *Flowers* two inches in diameter. *Sepals* and *petals* subsimilar, spreading, concave, elliptic-ovate, acute, orange-brown, pale at the base. *Lip* much smaller, sessile, articulate on the very short broad foot of the column, broader than long, deeply three-lobed; lateral lobes ear-shaped, yellow banded and spotted with purple; mid-lobe styliform; disk with a horseshoe-like erect appendage, consisting of two linear-oblong obtuse yellow arms spotted with red, between which are three collateral oblong calli. *Column* stout, pale, incurved. *Anther* hemispheric; pollinia of two very unequal oblong pairs on a slender linear strap that terminates below in an acute glandular tip, and bears no defined gland; the strap projects far beyond the anther and obscure rostellum, and overhangs the broad stigmatic depression.—*J. D. H.*

Fig. 1, Lip spread open; 2, processes and calli of the disk of the lip; 3, column; 4 and 5, anther; 6 and 7, pollinia:—*all enlarged*; 8, view of whole plant, about one-fourth of the *natural size*.



M. S. del. J. N. Fitch, lith.

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Tab. 7263.

CARLUDOVICA MICROCEPHALA.

Native of Costa Rica.

Nat. Ord. Cyclantheæ.—Tribe Carludoviceæ.

Genus Carludovica, *Ruiz & Pav.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 953)

Carludovica *microcephala;* humilis, caule brevi valido erecto, foliis parvis gracile petiolatis unicostatis infra medium furcatis, laciniis lanceolatis acuminatis sub-8-nerviis, vagina brevi coriacea, spadice gracili pedunculato parvo oblongo, spathis ad basin spadicis binis late ovatis apice attenuatis, caducis, fl. masc. perianthii lobulis 1-seriatis oblongis, filamentis mamillæformibus brevissimis apiculatis, fl. fem. perianthii lobis brevissimis latis, staminodiis simplicibus filiformibus.

C. microcephala, *Hort. Berol.*

Except that it was sent to the Royal Gardens of Kew from that of Berlin in 1880, I have no information as to this curious dwarf species of *Carludovica*, beyond what has been kindly communicated by Dr. Wendland, to whom I sent the drawing together with that of *Chamædorea stolonifera* (Plate 7265). That excellent botanist informs me that it is a native of Costa Rica, where it has been found by both Warsewicz and himself; and, that like *C. atrovirens*, H. Wendl., it belongs to a section of the genus with two spathes below the spadix. I do not find the name *C. microcephala* in the Index of all known flowering plants now being printed at Kew, nor does the plant agree with the description of any published species. In the stem it resembles the young plant of various scandent species, but as it has now been twelve years at Kew, throwing out no lateral roots (indicative of a climbing habit), and flowering repeatedly, it is presumable that it belongs to the short-stemmed group of the genus. Its near ally would appear to be *C. ensiformis*, figured at t. 6418 of this work, which has a very short stem, bifid leaves, and a similar small oblong spadix; but in that plant the leaves are distichous, with very stout petioles, are more deeply divided, and the segments are ensiform

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and only four-nerved, with the nerves very distant. In the structure of the male and female flowers these two species are very closely allied.

C. microcephala flowers annually in a stove at Kew in the spring months.

Descr. *Stem* three and a half inches high, subclavate, narrowing from one and a quarter inch in diameter at the top to two-thirds inch at the base, throwing out subterranean suckers, green crossed with about twelve broad brown scars of fallen leaves. *Leaves* numerous at the top of the stem, ten to eighteen inches long, dark green, split to below the middle into two lanceolate finely acuminate plicately about eight-nerved segments; petiole very slender, dilated at the base into a fleshy purplish open sheath. *Peduncle* two to four inches long, slender, naked, green, furnished at the base with narrow brown lanceolate appressed sheaths about one inch long. *Spadix* three-fourths inch long, oblong, obtuse, with about eight groups of flowers, subtended by two opposite pale green ovate spathes one to one and a half inches long, with long green tips. *Male fl.* with one row of many short oblong perianth lobes; filaments subglobose with short tips; anthers shortly oblong. *Fem. fl.:* perianth-lobes four, very short, much broader than long; staminodes one and a half inch long, simple, filiform. *Stigmas* subglobose.—*J. D. H.*

Fig. 1, Male fl.; 2 and 3, stamens; 4, fem. fl.; 5, transverse section of ovary:—*all enlarged.*

M.S. del, J.N. Fitch, lith.

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Tab. 7264.

CALOCHORTUS Kennedyi.

Native of California and Arizona.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Calochortus, *Pursh.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 820.)

Calochortus (*Mariposa*) *Kennedyi*; bulbo ovoideo, caule gracili 1–4-floro recto vel flexuoso, foliis linearibus, pedunculis brevibus vel elongatis, sepalis lineari-oblongis intus pallide citrinis basi maculâ castaneo-atra præditis, petalis cuneatis splendide coccineo-luteis ungue nigro-castaneo foveolâ centrali dense hispida prædito, staminibus petalis 2–3-plo brevioribus, ovario cylindrico-trigono stigmatibus falcatis.

C. Kennedyi, *Porter in Coulter Bot. Gaz.* vol. ii. p. 79; *S. Wats. in Proc. Amer. Acad.* vol. xiv. p. 265; *Bot. Calif.* vol. ii. p. 171.

The genus *Calochortus* is distinguished from all the other Liliaceæ by its distinctly dichlamydeous perianth. Whilst *Tulipa* is entirely restricted to the Old World, *Calochortus* belongs exclusively to America, being confined to Mexico, Arizona, California, British Columbia and the Rocky Mountains. Since I monographed the genus in 1875 in the fourteenth volume of the "Journal of the Linnean Society," a large number of new species have been discovered. Of these the present plant is the most showy. It entirely agrees in structure, foliage, and general habit with *C. luteus*, *splendens*, and *venustus*, but the petals are brilliant scarlet with a dash of yellow in it, with a dark claw and a very distinct, very hispid, nearly basal nectary. It has been found in Arizona and several places in Southern California. Our drawing was made from a plant that flowered in Kew Gardens last June. The bulbs were sent to Kew by Mr. Charles R. Orcutt, of San Diego, the editor of the "West American Scientist." At Kew it flowered freely in an open border, and appears to be as hardy as the other species of the section *Mariposa*.

Descr. *Bulb* small, ovoid, producing the new one close to itself. *Stem* slender, terete, straight or flexuose, simple or branched. *Leaves* linear, produced in a tuft from the fork if the stem is branched. *Flowers* one to four; peduncles

ascending, long or short. *Sepals* linear-oblong, an inch long, pale yellow inside, with a round brown-black spot at the base. *Petals* cuneate, as broad as long, placed nearly edge to edge in the expanded flower, rounded to a minute cusp on the outer margin, bright scarlet with a dash of yellow, ciliated towards the base with a few large brown-black bristles; claw brown-black with a very distinct densely hispid brown-black nectary in the middle. *Stamens* less than half as long as the petals; filaments much shorter than the pale yellow linear anthers. *Ovary* cylindrical-trigonous, narrowed to the base and apex; stigmas spreading, sessile.—*J. G. Baker.*

Fig. 1, Base of petal, showing nectary and bristles; 2, a stamen; 3, pistil: —*all enlarged.*

M.S.del. J.N.Fitchlith.

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Tab. 7265.

CHAMÆDOREA STOLONIFERA.

Native of South Mexico.

Nat. Ord. Palmeæ. Tribe Areceæ.

Genus Chamædorea, *Willd.*; (*Benth. & Hook. f. Gen. Pl.* vol. iii. p. 910.)

Chamædrea (Collinia) *stolonifera;* caudice tenui valde stolonifero, foliis bifurcatis, laciniis late oblongis margine exteriore superne grosse crenato-serratis utrinque 9-nerviis, spadicibus masculis 5–6-ramosis, fœmineis simplicibus, corolla mascula et fœminea trifida brunnea demum aurantiaca, fructibus oblongo-globosis. *H. Wendl. mss.*

I am indebted to Dr. Wendland for the above diagnosis of this previously unpublished species, as the Royal Gardens are for the plant figured, which was received from Herrenhausen in 1882, and flowered in the tropical Aroid house in the spring months. Dr. Wendland refers it to his section *Collinia* (genus of Martius) characterized by the flowers of both sexes being trifid with valvate lobes; and to which also belongs *C. elegans*, Mart., figured at Plate 4845 of this work, a native, like *C. stolonifera*, of Mexico.

A striking character of *C. stolonifera* is its excessively stoloniferous habit, resulting in the stems forming dense clusters amongst the bases of which the stolons creep, some however radiating out horizontally and giving rise to young plants at some distance from the old stems, as shown in the plate.

Descr. *Stems* slender, a yard high, hardly so thick as the middle finger, growing in dense tufts with interlaced stolons, green, rather closely annulate. *Leaves* terminal, ten inches long, bright green, shortly petioled, obovate in outline, cleft to below the middle into two dimidiate-oblong subacute nine-nerved many-nervuled segments; outer margin of the segments crenately toothed, inner slightly convex; petiole one to one and a half inch, slender; sheath short. *Spadices* infra-foliar; males shorter than the leaves, subcorymbosely five to six-branched; branches three to five inches long, spreading and flexuous, green;

peduncle five inches long, clothed up to the branches of the spadix, with three to five brown lanceolate acuminate imbricating convolute sheaths. *Male fl.* rather loosely scattered on the branches of the spadix, sessile by a broad base, globose, about one-eighth inch diameter, at first brown, then orange-yellow. *Calyx* annular, membranous, obscurely toothed. *Corolla* thickly coriaceous, three-lobed to the middle, lobes valvate. *Stamens* with the filaments confluent in a fleshy broad six-toothed ring; anther-cells divaricate below, linear, marginal as it were on the teeth of the ring. *Pistillode* columnar, with a three-lobed stigma.—*J. D. H.*

Fig. 1, Portion of branch of spadix and flowers; 2, lobe of corolla; 3, ring of stamens and pistillode; 4, portion of do. with one anther :—*all enlarged.*



M.S. del. J.N. Fitch, lith.

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Tab. 7266.

RANUNCULUS carpaticus.

Native of Transylvania.

Nat. Ord. Ranunculaceæ.—Tribe Ranunculeæ.

Genus Ranunculus, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 5.)

Ranunculus *carpaticus*; rhizomate horizontali crasso, caule simplici erecto 1–3-folio 1–2-floro basi appresse piloso, foliis sparse pilosis, radicalibus longe petiolatis palmati-partitis segmentis fissis et crenato-dentatis, caulinarum inferiore breviter petiolato radicalibus subsimili, superioribus sessilibus amplexicaulibus, summo 3–5-partito segmentis integerrimis, sepalis patulis patentim pilosis, petalis duplo longioribus aureis, toro spherico setoso, acheniis reniformi-obovoideis subcompressis glabris rostro hamato puberulo duplo longioribus.

R. carpaticus, *Herbich. Sel. Pl. Rar. Gallic.* 15; *Walp. Rep.* i. 34; *Schott. in Bot. Zeit.* 1851, 393.

R. Gouanii, *Willd. Sp. Pl.* vol. ii. p. 1322 *ex parte*; *Baumg. Enum. Stirp. Magn. Transylv. indig.* ii. 125.

R. montanus, *var.* dentatus, *Baumg. l. c.* 124.

R. carpaticus is confined to subalpine forests in the mountains of Eastern Hungary, bordering Roumelia, at elevations of four thousand to five thousand feet, where it represents *R. montanus*, Willd., and *Gouanii*, Willd., of the more western Alps and Pyrenees. It is a much larger flowered plant than either of these, and is indeed one of the largest flowered European species, though in this respect it varies a good deal, the flower of some specimens in the Herbarium at Kew being nearly double the size of others.

Professor Janka, on the ticket of a specimen received at Kew Herbarium in 1864 has given *R. aduncus*, Gren. and Godr. Fl. Franc. (vol. i. p. 32) a native of the Alps, as a synonym, but that plant is described as never having amplexicaul leaves, and it has petiolulate leaf-segments, and a much longer beak of the achene.

The specimen figured was received at the Royal Gardens, Kew, in 1891, from Professor Römer, of Kronstadt, in Hungary, and it flowered in the Herbaceous ground in May of this year.

November 1st, 1892.

Descr. Whole plant more or less softly hairy with appressed or more or less spreading hairs. *Rootstock* one to three inches, creeping, as thick as the little finger or less, yellowish. *Stem* eight to twelve inches high, as thick as a crow-quill, erect, one to two-leaved above the middle, one to two-fld. *Leaves ;* radical long-petioled, orbicular in outline, five inches broad or less, bright green, copiously hirsute, deeply palmately lobed almost to the base ; segments cuneately obovate, lobulate and crenate-toothed, nerves deeply impressed; lower cauline leaf sessile or shortly petioled, like the radical but narrower ; uppermost leaf greatly reduced, amplexicaul, five-lobed, lobes lanceolate entire. *Flowers* stoutly peduncled, one to two inches diameter ; peduncle two to three inches, appressedly, hairy. *Sepals* half inch long or less, oblong, obtuse, spreading, sparsely hirsute, yellow green. *Petals* orbicular-obovate, golden yellow ; basal scale broad, truncate. *Stamens* very many, filaments longer than the anthers. *Head* of *carpels* globose. *Achenes* tumid, glabrous, narrowed into a strongly hooked puberulous beak not half as long as the body.—*J. D. H.*

Fig. 1 and 2, Stamens ; 3, achene :—*all enlarged.*



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Tab. 7267.

FERULA tingitana.

Native of Northern Africa and Syria.

Nat. Ord. Umbelliferæ.—Tribe Peucedaneæ.

Genus Ferula, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 917).

F. tingitana; glabra, caule robusto elato inferne folioso, foliis amplis viridibus glaucescentibus lucidis triangulari-ovatis quarternatim pinnatisectis, segmentis in petiolulum brevem angustatis oblongis in lacinias breves oblongas obtusas pinnatipartitis, superiorum vaginis dilatatis, bracteis ramorum basin oblongis cymbiformibus membranaceis deciduis, umbellis globosis aureis, fructu elliptico caesio margine semine quadruplo angustiore cincto, jugis tenuibus prominentibus, valleculis 3-vittatis, commissure 4-vittata.

F. tingitana, *Linn. Sp. Pl.* p. 247. *Gaertn. Fruct.* vol. ii. p. 28, t. 85, f. 1. *Ait. Hort. Kew*, ed. 2, vol. ii. p. 137. *Lamk. Encycl.* vol. ii. p. 455. *Illustr. Gen.* t. 205, f. 2. *Desf. Fl. Atlant.* vol. i. p. 251. *DC. Prodr.* vol. iv. p. 173. *Boiss. Fl. Orient.* vol. ii. p. 992. *Ball in Journ. Linn. Soc.* vol. xvi. 474.

F. sancta, *Boiss. Diagn. Pl. Or.* vol. i. pt. X, p. 39.

Ferula tingitana foliis lucidis, &c. *Breyn. Hist. Prodr. Fasc. Rar. Pl.* vol. i. p. 62 (1680). *Sutherland Hort. Med. Edinb. Cat.* (1683). *Ray. Hist. Pl.* vol. iii. p. 253 (1624). *Hermann Parad. Batav.* p. 165, *cum Ic.* (1698). *Rivin. Introd. Gen. in rem Herbar.* t. 256 (1699). *Ord. Pl. fl. Pentapet. Ic.* (1699). *Morison Plant. Hist. Univ. Oxon.* sect. x. p. 309, t. 15 (1699). *Boerk. Ind. Alt Pl. Hort. Lugd. Bat.* p. 65 (1720). *Linn. Hort. Cliff.* p. 95 (1737).

The chief interest attached to this noble Umbellifer is that it has long been supposed to be that which produces the Gum Ammoniac of Northern Africa, and which article is still largely exported to Europe and the East from the Maroccan ports of Mogador and Mazagan. For this supposition Lindley is the first authority, according to the late Dr. Pereira, who says (Mat. Med. Ed. 3 (1853) p. 1713), "African Ammoniacum, in Arabic Fasogh or Fashook, is, Dr. Lindley assures me, the produce of *Ferula tingitana*." In this opinion he has been followed by Fluckiger and Hanbury, and Bentley and Trimen (under *Dorema Aucheri*, Medicinal Plants, vol. ii. No. 129). It is singular that none of these authors seems to have compared the leaves of *F. tingitana* with the only authoritative figure of those of the Fashook, or African Gum Ammoniac

plant, namely that given in "Jackson's Account of the Empire of Morocco" (Ed. iii. 1814, p. 136, plate 7), and which represents an entirely different species of Umbellifer. That Jackson's figure represents the true Fashook is now proved by a living specimen at Kew, procured by Mr. Hunot, H.B.M. Vice-Consul at Saffi, from the interior of Marocco, in 1886, and which, Mr. Watson informs me, now shows signs of flowering. This latter plant more nearly resembles the foliage of the Canarian *F. Linkii*, Webb, than those of *F. tingitana*. I should add that Mr. Ball and I, when in Marocco, vainly sought for the Ammoniacum plant, which the natives assured us grew only in the interior districts inhabited by predatory and fanatical Moors, to the north of the city of Marocco. Mr. Ball (judging from Jackson's figure) was decidedly of opinion that it would prove to be a species of *Elaeoselinum*, of which genus we had found a small species with somewhat similarly cut leaves on the road to Marocco, where the Fashook had been reported to have been seen (see "Marocco and the Great Atlas," p. 386). I have only further to remark that Lindley's opinion was founded on specimens of the gum which he received from Marocco, together with others of *F. tingitana*, as the plant believed to produce it, and that I hope in due time to be able to figure the true plant in this work.

Mr. Ball (Journ. Linn. Soc., vol. xvi. p. 474) observes that in specimens of *F. tingitana* gathered by us at Tangiers, the central umbels had peduncles five to six inches long, that both involucres and involucels were sometimes absent, or that the involucres present consisted of three to four long setaceous bracts, and the involucels of many short setaceous bracteoles.

F. tingitana is a native of the whole coast of Northern Africa, from Marocco to Tripoli, as also of the Islands of Rhodes and Chios, and of Syria. Specimens from the last-named country, having leaves more glaucous and with more obtuse segments of the leaflets, were described at first by Boissier as a different species, *F. sancta*, but subsequently referred by him to the African plant, not even as a variety. The obtuse leaflets of the specimen here figured may indicate its being the Syrian form, but unfortunately nothing is known of its origin, it having been in cultivation at Kew

for many years. According to Morrison the species was introduced into England before 1680 by Mr. Alex. Balaam. Linnæus, in Hortus Cliffortianus and Sp. Plant. (citing Tournefort Institutes, p. 321), gives Spain as a habitat, but this, though repeated in Hortus Kewensis, has never been confirmed.—*J. D. H.*

Fig. 1, Male flower; 2, fem. do. with the petals and calyx-limb removed; 3, head of ripe carpels; 4, transverse sections of mericarps; 6, whole plant:—*all enlarged* except fig. 3, which is of the *natural size*, and 6, which is greatly reduced.







4

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M.S. del, J.N. Fitch lith.

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Tab. 7268.

MICROSTYLIS Scottii.

Native of Pegu and the Malayan Peninsula.

Nat. Ord. Orchideæ. Tribe Epidendreæ.

Genus Microstylis, *Nutt.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 494).

Microstylis *Scottii*; foliis 2–5 sessilibus oblique ovatis acuminatis marginibus undulatis, supra brunneis fascia lata marginali pallida brunneo punctata, scapo elongato acute tetragono colorato, racemo elongato stricto multifloro, bracteis lanceolatis reflexis ovarium breve subæquantibus, floribus parvis subsessilibus, sepalis lateralibus late oblongis marginibus recurvis, dorsali petalisque longioribus et angustioribus, labello viridi suborbiculari, auriculis erectis laminæ rotundatæ apice constrictæ et 2-lobæ æquilongis.

M. Scottii, *Hook. f. Fl. Brit. Ind.* vol. v. p. 687; et in *Hook. Ic. Pl.* t. 2001.

When, only two years ago, I described this remarkable species from a drawing belonging to the Calcutta Botanical Gardens, and observed that it was "eminently worthy of cultivation," I little anticipated being so soon able to figure it from living specimens grown in the Royal Gardens, Kew. The drawing above referred to represents a specimen with the blade of the leaf of a lustrous dark bronzed hue, the broad dotted margin as more defined and cream-coloured; the waving of the margins of the leaves as if they were crenated, the scape as red, and the lateral sepals not half the length of the dorsal and petals. There are also minor differences, as in the large size of the foliage of the Kew plant, and others which may be seen from an inspection of the copy in the "Icones Plantarum" of the Calcutta drawing, but none that militates against its specific identity with that from Calcutta. It must be borne in mind, that the latter drawing was made by a native artist in the Botanical Gardens, from a cultivated specimen; and also that the original came from Rangoon, in Pegu, a widely distant locality from that of the plant here figured, which was sent from Singapore; the distance between these localities being upwards of a thousand miles.

December 1st, 1892.

M. Scottii belongs to a rather large section of the genus (Crepidium, *Blume*) with the sides of the lip produced upwards into two elongate auricles, to which section also belong *M. metallica* (Tab. 6668) and *M. Josephiana* (Tab. 6325).

The Royal Gardens are indebted to those of Singapore for the specimen here figured, which was received from Mr. Ridley in October, 1891, and flowered in the tropical orchid house in May of the present year.—*J. D. H.*

Fig. 1, Front, and 2 side view of flower; 3 and 4, column; 5, anther; 6, pollinia:—*all enlarged.*

M.S. del, J.N.Fitch lith.

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Tab. 7269.

KNIPHOFIA pauciflora.

Native of Natal.

Nat. Ord. Liliaceæ.—Tribe Hemerocalleæ.

Genus Kniphofia, *Moench.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 775.)

Kniphofia *pauciflora;* fibris radicalibus gracilibus, foliis paucis linearibus firmulis viridibus pedalibus vel sesquipedalibus utrinque acute carinatis margine lævibus, pedunculo erecto gracili foliis æquilongo, racemo laxo paucifloro, pedicellis brevibus apice articulatis, bracteis lanceolatis scariosis pedicellis æquilongis, perianthio anguste infundibulari pallide citrino, lobis brevibus ovatis obtusis, genitalibus omnibus demum distincte exsertis.

K. pauciflora, *Baker in Journ. Bot.* 1885, p. 280; et in *Gard. Chron.* 1889, vol. ii. p. 65, fig. 10.

Of late years the number of known species of *Kniphofia* has increased very rapidly. In 1842, when Kunth monographed them in the fourth volume of his "Enumeratio Plantarum," only seven species were known, and now they have increased to forty. They occur, not only outside the tropic in Cape Colony and Natal, but there are endemic types in the mountains of Madagascar, Angola, Abyssinia, and Zambesi-land. The present plant is readily distinguished by its slender habit, narrow leaves, lax racemes and pale yellow flowers. It was first gathered in 1860 by Mr. Sanderson, and was refound two years ago and introduced into cultivation by Mr. J. Medley Wood, A.L.S., the energetic Superintendent of the Botanic Garden at Durban. So far it has been grown at Kew under cover, and has been irregular in its time of flowering. This year it opened out first in March and flowered again in July. It is doubtful whether it will prove hardy, but it is very ornamental in a small pot in a cool conservatory. Our drawing was made from a specimen that flowered in summer in the herbaceous department of the Royal Gardens.

Descr. *Root-fibres* slender. *Leaves* few to a tuft, linear, green, firm, a foot or a foot and a half long at the flowering time, tapering gradually to the point, acutely keeled on both surfaces, not at all serrated on the margins.

December 1st, 1892.

Peduncle slender, terete, as long as the leaves. *Raceme* lax, few-flowered, three or four inches long; flowers drooping when expanded, pale lemon-yellow; pedicels short, articulated at the apex; bracts lanceolate, scariose, as long as the pedicels. *Perianth* narrowly funnel-shaped, under an inch long; lobes short, ovate, obtuse. *Stamens* and *style* finally distinctly exserted; anthers small, oblong. —*J. G. Baker.*

Fig. 1, Section of leaf; 2, a single flower; 3, front view of anther; 4, back view of anther; 5, pistil; 6, apex of style:—*all enlarged*; 7, whole plant:—*much reduced.*



M. Vide del. et lith.

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Tab. 7270.

AGANISIA ionoptera.

Native of Peru.

Nat. Ord. Orchideæ. Tribe Vandeæ.

Genus Aganisia, *Lindl.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 544.)

Aganisia *ionoptera;* pseudobulbis cæspitosis ovoideis monophyllis, folio angusto elliptico-lanceolato acuminato 3-nervi, scapo elongato erecto simplici, floribus laxe racemosis coeruleis cernuis, bracteis parvis ovatis, sepalis late ovatis subacutis violaceis apicibus albis, petalis consimilibus sed minoribus deflexis, labelli albi lobis lateralibus auriculæformibus sanguineo striatis terminali transverse oblongo lineis 2 concentricis sanguineis notato, disco inter lobos laterales 2-calloso, polliniis glandulam triangularem sessilibus.

A. ionoptera, *Nichols. Dictionary of Gardening*, vol. i. p. 35 (1885). *Rolfe in Lindenia*, vol. vi. t. 287 (1891).

Koellensteinia ionoptera, *Linden and Reichb. f. in Gard. Chron.* 1871, p. 1451.

The genus *Aganisia* was established by Lindley in the Botanical Register (1839, Misc. No. 65, and 1840, t. 32) on a single Demeraran species (*A. pulchella*). Lindley says of the genus, "if its column were produced into a foot, and the lower sepals unequal at the base, it would be a *Maxillaria*." To this are added by Bentham in the Genera Plantarum, and Reichenbach in various publications, about eight other species. As these present great differences in habit, and have never yet been all brought together in one work, I shall enumerate them here in the interest of Orchidologists. They are:—1. The above-named *A. pulchella* with the pseudobulbous one-leaved habit of *A. ionoptera*, but with long creeping rhizome, a short scape, and white flowers with a yellow lip; the plant resembling a small *Cœlogyne*. 2. *A. fimbriata*, Reichb. f. in Gard. Chron. 1874, ii. 452 and 804, a native of Demerara, with white petals, and a blue saccate fimbriate lip. 3. *A. cærulea*, Reichb. f. in Gard. Chron. 1876, ii. p. 226, a blue-flowered Brazilian species, also with a saccate fimbriate lip. 4. *A. lepida*, Linden and Reichb. f. in Nov. Act. Nat. Cur. vol. xxxv. pt. ii. (1876), p. 15, t. 5, and Beitr. Orchidk. p. 15,

t. 5, with one- or two-leaved pseudobulbs, and white? flowers; it is a native of tropical America. 5. *A. Oliveriana*, Reichb. f. in Gard. Chron. 1878, vol. i. p. 558, from Brazil, with pseudobulbs and blue flowers. 6. *A. Kelneriana*, Benth. in Gen. Pl. vol. i. p. 544, which is the type of Reichenbach's genus *Koellensteinia*, figured in his "Xenia Orchidacea," t. 24. 7. *A. cyanea* (Warrea cyanea*, *Lindl. Bot Reg.* 1844, Misc. No. 3; 1845, t. 28, Zygopetalum tricolor, *Lindl. l. c.* 1846, sub t. 64), a native of New Grenada, with the tufted leaves of *A. graminea*, no pseudobulbs, white sepals and petals, and blue lip. 8. *A. graminea*, Benth. l. c. (Koellensteinia graminea, *Reichb. f. in Bonplandia*, vol. iv. p. 323 (1856); *Hook. Bot. Mag.* t. 6338; *Walp. Ann.* vol. vi. p. 552; Maxillaria graminea, *Lindl. in Bot. Reg.* 1836, sub t. (1802); Promenæa graminea, *Lindl. l. c.* 1843, Misc. 13), a Demeraran species with a tufted habit, no pseudobulbs, tufted leaves, and small yellow flowers. 9. *A. venusta*, Rolfe in Herb. Kew (Zygopetalum venustum, *Ridley in Trans. Linn. Soc. Ser.* ii. *Bot.* vol. ii. p. 283), from Demerara.—The *A. cyanea*, Reichb. f. in Nov. Act. Nat. Cur. xxxv. pt. ii. (1876) p. 13, t. 4, is *Acacallis cyanea*, Lindl. Fol. Orchid., a closely allied but much larger flowered genus.

A. ionoptera is a native of Peru, where it was found by the collector Wallis, who sent it to Linden, from whom the plant here figured was obtained at the International Horticultural Exhibition of Brussels in 1891. It flowered in the Royal Gardens in June, 1892.—*J. D. H.*

Fig. 1, Lip and column; 2, side view of the same; 3, dorsal and ventral view of anther; 4 and 5, pollinia:—*all enlarged.*

* *W. carnea*, by misprint, in Gen. Plant. vol. iii. p. 544.



M.S. del. J.N. Fitch lith.

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Tab. 7271.

ALLOPLECTUS Lynchei.

Native of New Grenada?

Nat. Ord. Gesneraceæ.—Tribe Cyrtandreæ.

Genus Alloplectus, *Mart.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1008.)

Alloplectus Lynchei; caule robusto, foliis oblongo-lanceolatis acuminatis inæqualiter crenato-serratis in petiolum brevem crassum angustatis supra flavo-viridibus costa nervisque sanguineis, subtus sanguineo-purpureis, floribus confertis breviter pedicellatis, bracteis lanceolatis calyce breviori-bus, calycis pilosi segmentis ovato-lanceolatis obtuse acuminatis pallide carneis, corollæ tubo subcylindraceo albo pilis rubris laxe villoso, gibbo ima basi parvo, fauce vix constricta, lobis subæqualibus rotundatis patentibus primulinis ciliatis, filamentorum tubo ovario styloque pilosis, stigmate 2-lobo lobis rotundatis.

A beautiful species and very distinct from any hitherto figured or described, as known to me. Its nearest ally is perhaps *A. tigrina* (*Heintzia tigrina*, Tab. 4774), a native of Venezuela, which has a similar broadly cylindric corolla-tube with subequal rounded spreading lobes, but which differs in the long petioled leaves, solitary axillary longer pedicelled flowers, in the very broad toothed calyx-segments with cordate bases, in the very short style with a simple stigma, and in the colouring of both the foliage and flowers. It also a good deal resembles *A. semicordatus*. Poepp. and Endl. (Nov. Gen. and Sp. vol. iii. p. 5) a Peruvian scarlet-leaved species, which has very coriaceous or fleshy leaves, with long points, and very different cordate bracts.

Of *Alloplectus* there are about fifty recorded species, but though affording good specific characters, they are difficult to determine from herbarium specimens, owing to the fleshy nature of the large bracts and calyx of most. Still I have no difficulty in recognizing as *A. Lynchei* a dried specimen of a plant which was sent to Kew without any information in 1885; as also another received from Mr. Lynch in 1890, with the information that it was introduced by Linden; and a third received from the late Sir George Macleay. Mr. Lynch informs me that in his desire to

have the species determined he sent a specimen to Mr. Linden, and that the name returned was that of a totally different plant; and further, that he (Mr. Lynch) has very recently received it from St. Petersburgh as *Sinningia purpurea*, an equally impossible identification if the latter is a true *Sinningia*, a genus with inferior ovary, a tuberous rhizome and five glands on the disc.

Under these circumstances I have ventured to describe the present plant as new, and to name it after Mr. Lynch, through whose good offices this and so many other fine plants have been sent to me from the Cambridge Botanical Gardens, for figuring in the BOTANICAL MAGAZINE. There are good specimens of it at Kew, of which Mr. Watson informs me the leaves become red purple on both surfaces.

The plant here figured flowered in the Cambridge Botanical Gardens in July of the present year.—*J. D. H.*

Fig. 1, Corolla; 2, base of ditto, laid open, with stamens; 3 and 4, anthers; 5, disk, gland, and ovary with style and stigma:—*all enlarged.*